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LONG RANGE FACILITIES
PLANNING
PLAN GUIDE LINES
VOL. I OF V

Transportation
Research Institute



NATIONAL STEEL AND SHIPBUILDING COMPANY
A MORRISON-KNUDSEN COMPANY

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SP-1 FACILITIES PANEL PROJECT

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LONG RANGE FACILITIES

PLANNING

PLAN GUIDE LINES

VOL, I OF V

NATIONAL STEEL AND SHIPBUILDING COMPANY

IN COOPERATION WITH THE

DEPARTMENT OF TRANSPORTATION

MARITIME ADMINISTRATION

APRIL, 1982

PLAN GUIDE LINES

Volume I

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- Mission Statement and Objectives
- Yard History
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LONG RANGE FACILITIES PLAN

MISSION STATEMENT AND

PRIMARY OBJECTIVE

The main objective of the Long Range Plan is to provide and maintain a new ship construction facility with The flexibility to build any mix of ships from 100 percent commercial (crude and product carriers, bulkers, OBO'S, containerships, RORO's, etc.) to 100 percent Navy non-combatants.

The facilities will provide the capabilities for increasing ship repair work to serve as a counter-cyclical activity to new construction.

The facilities will provide optimum flexibility for doing other-than-ship heavy steel construction, especially in the event of a downturn in new ship construction.

Maintain a stable, well trained labor force for the efficient manufacturing of new-ship and other heavy steel products.

The long term objective in laying out the yard' and in providing facilities is to achieve optimum flexibility for the economical construction of a wide variety of commercial and Navy vessels. Also, in the event of a national emergency, have the capabilities to mobilize quickly and effectively to meet the nation's defense needs.

YARD HISTORY

.

National Steel and Shipbuilding Company is the largest shipbuilder on the west coast. NASSCO has been in the marine business since 1945; the company has expanded several times to its current size of 147 acres. Current shipbuilding activities include both Navy and commercial vessels, with a significant amount of Navy repair and overhaul work for the Pacific fleet, which makes its home port in San Diego. The following is a brief history of NASSCO's growth.

- 1905 Business established-California Iron Works operated as a foundry and machine shop.
- 1922 Name changed to National Iron Works. Operation expanded to include steel fabrication.
- 1938 National Iron works purchased the Ingle Manufacturing Company to expand its scope of operation to include industrial and marine ranges.
- 1945 National Iron Works entered the shipbuilding field and launched its first 52-foot tuna boat.
- 1948 The adjacent Lynch Shipbuilding Company-was purchased to expand the shipbuilding business.
- 1949 Name was changed to National Steel and Shipbuilding Corporation.
- 1951 First military contract.
- 1957 NASSCO purchased the adjacent Martinolich Shipbuilding Company to further expand shipbuilding activities.
- 1962 Ownership by two principals: Morrison-Knudsen Company and Kaiser Industries.
- 1966 Received largest Navy fixed-price contract award in peacetime history for 17 LST's.
- 1973 Entered into the large commercial tanker field.
- 1976 Completed a major facilities expansion and modernization program.
- 1979 December 3, NASSCO became a sole subsidiary of Morrison-Knudsen Company.

HISTORY OF LONG RANGE FACILITY

PLAN DEVELOPMENT

January '78	Norfolk, Virginia. At a meeting of Sp-1, the Maritime Administration invited Richard M. Muther to address the group on the subject of long range facility planning.
January '79	Atlanta, Georgia. A week-long seminar sponsored by MARAD was given to train facility planners from United States shipyards in the Muther techniques of long range facility planning.
May '79	NASSCO submitted a contract proposal to MARAD for cost sharing the development of NASSCO's Long Range Facility Plan.
July '79	Richard M. Muther addressed NASSCO's executives to explain his methodology and from that meeting a "Mission Statement" was developed.
April '80	Contract awarded by MARAD.
May '80	Tour of United States shipyards by NASSCO facility planners.
October '80	First draft of the Long Range Facility Plan presented to top management.
December '80	Second draft of the Long Range Facility Plan presented to top management.
January '81	Second draft of Long Range Facility Plan put into final form.
February '81	Second draft of Long Range Facility Plan Alternatives presented to NASSCO's Board of Directors.
March '81	Request for six month extension on L.R.F.P. contract to allow for top management decision on L.R.F.P. direction.
May '81	Selection of alternative five (ITT and adjoining 20 acres) for further development.

- June '81 - Negotiations started to gain option on ITT ' site and favorably completed in early July. (Option good until December 31, 1981.)
- July '81 - Request for second six month extension on L.R.F.P. contract. Time required to allow LR - Planning for satellite operation.
- August '81 - Started LR -Plans for new NASSCO South yard and phase in requirements to complement main yard operations. Conceptual expansion plans presented to Morrison-Knudsen Board of Directors NASSCO's parent-company).
- September '81 - Preliminary report published, defining the direction to be taken in developing the new NASSCO South yard.
- October '81 - South yard development plans finalized for the November Morrison-Knudsen Board meeting.
- December '81 - Plans for South yard scrapped due to high interest rates, the general state of the economy and an expected decline in potential Navy contracts amid federal budget-tightening.
- January '82 - Yard capacity study indicating potential throughput bottlenecks finalized and published.
- April '82 - Long Range Facility Planning (LRFP) contract with MARAD completed.

NASSCO's Long Range Facility Plan has become a way of life. It will continue to be the guiding light for present and future capital projects.

LONG RANGE FACILITIES

PLANNING ASSUMPTIONS

1. NASSCO will continue in the new ship construction business of non-combatant Navy vessels and Merchant Marine ships in the 28,000 - 190,000 DWT range, 100 percent either way, or any mix of both.
2. Flexibility will be provided so that combatant type Navy vessels could be constructed in the future if so desired.
3. Flexibility will be provided so that other-than-ship heavy steel construction can be undertaken:
 - For special contracts such as off-shore drilling rigs.
 - For general heavy construction work to keep the yard operating in the event of a downturn in new ship construction.
4. NASSCO has experienced a growth pattern of approximately five percent a year and in the long run has the potential of continuing this pattern. However, due to the highly cyclical nature of the business, the current short range projection is in a contraction of the base business.
5. There will be substantial changes in ship construction methods during the next 10 - 20 years. For example:
 - The sizes and weights of sections constructed away from the Building Ways and Building Dock and to be hoisted into those areas will increase in tonnage. These will be limited by the size of cranes available that the ground can support.
 - Pre-outfitting of pipe work, sheetmetal and the-like is in its infancy. This will become the norm and will be done in increasing amounts.
6. Construction time on the Ways and in the Building Dock will be reduced to provide faster throughput, and to allow the projected growth in "Equivalent Ships" to be met up to double the present volume. **This can be met, through improvements in construction methods, with the present Building Ways 2, 3 and 4 and Building Dock 1.**

7. There is a major move to change steel buying and storage procedures. Plate sizes will be rationalized and standardized to reduce costs, simplify storage, ease plate picking for orders and reduce the space required for steel storage.
8. Berths 2, 4, 5 and 6 are the only ones which can effectively be used for outfitting. Berth 3 is short, is usually blocked by Berth 2, and is not considered to be a practical outfitting position. Berth 1 is also not practical because it is in the way of the Building Dock. Berths 7 and 8 are small barge berths only and not practical for outfitting. Berths 9 and 10 are not served by crane and they are only suitable for repair work.
9. The small floating drydock lease expired October 1981 and was not renewed. This is of minor consequences since the capacity is limited to 2,600 tons with a shallow draft. We are assuming that, if the company plans to expand its repair capabilities, a substantially larger capacity drydock will be required.
10. An adequate labor force will be available for the foreseeable future.
11. NASSCO will continue basically as a heavy steel constructor and ship builder. We are assuming that the company will not get into the major use of aluminum, exotic metals or fiberglass for its major construction work.
12. Because of the mild climate, we assume that the company will continue to do most of its heavy construction work in the open air, not under roof.
13. General improvements in the use of direct and indirect hourly paid labor will continue at approximately the same rate as indicated in the ratio's.
14. Technological improvements in all phases of ship construction and support work will continue at approximately the same rate as during the last five years.

SECTION 11,

PRESENT AND FUTURE CAPABILITIES

NASSCO NEW CONSTRUCTION

CAPACITY STUDY

JANUARY 1982

BY: J. R. RUECKER

FACILITIES AND INDUSTRIAL ENGINEERING DEPT,

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1. INTRODUCTION

This report documents the primary facilities that could have an effect on yard throughput. The analysis of facility capabilities was undertaken as part of NASSCO's Long Range Facility Plan Development Program.

The facilities and their capabilities discussed in this document represent NASSCO as it was in 1981. As for the future, it will undoubtedly bring many changes for NASSCO. Tomorrow's products will have the potential of being different. Business will either grow or contract. Our market will vary. Processes must and will be improved. Supporting services will change. Operating times and working hours will alter. Therefore, the data in this report only gives us the potential capacity restrictions as they exist today.

The establishment of yard capacity has been based on those facilities which could have a major effect on new construction yard throughput. The data used to establish facility capacities was derived by averaging four capacity projections from different sources. This is covered in detail under the Capacity Development section of this report.

The major facilities capacities have been projected for three new construction scenarios; 100 percent commercial, 100 percent Navy and 50/50 commercial and Navy. The commercial work was based on a 50/50 mix of LaJolla and Ingram Class Product Carriers and the Navy work was based on a 75/25 mix of Destroyer Tenders (AD) and Cable Laying Ships (T-ARC-7). This mix of ships more or less is representative of our current and future new construction work. The Capacity Projections section of this report for the three scenarios list the major facilities with their maximum capacity for each scenario plus a capacity ranking. The capacity is the number of ships per year that a particular facility can support. The Capacity Ranking column gives a numerical indicator as to the effect that facility has on yard throughput. The number one (1) indicates that facility which would be the first to restrict

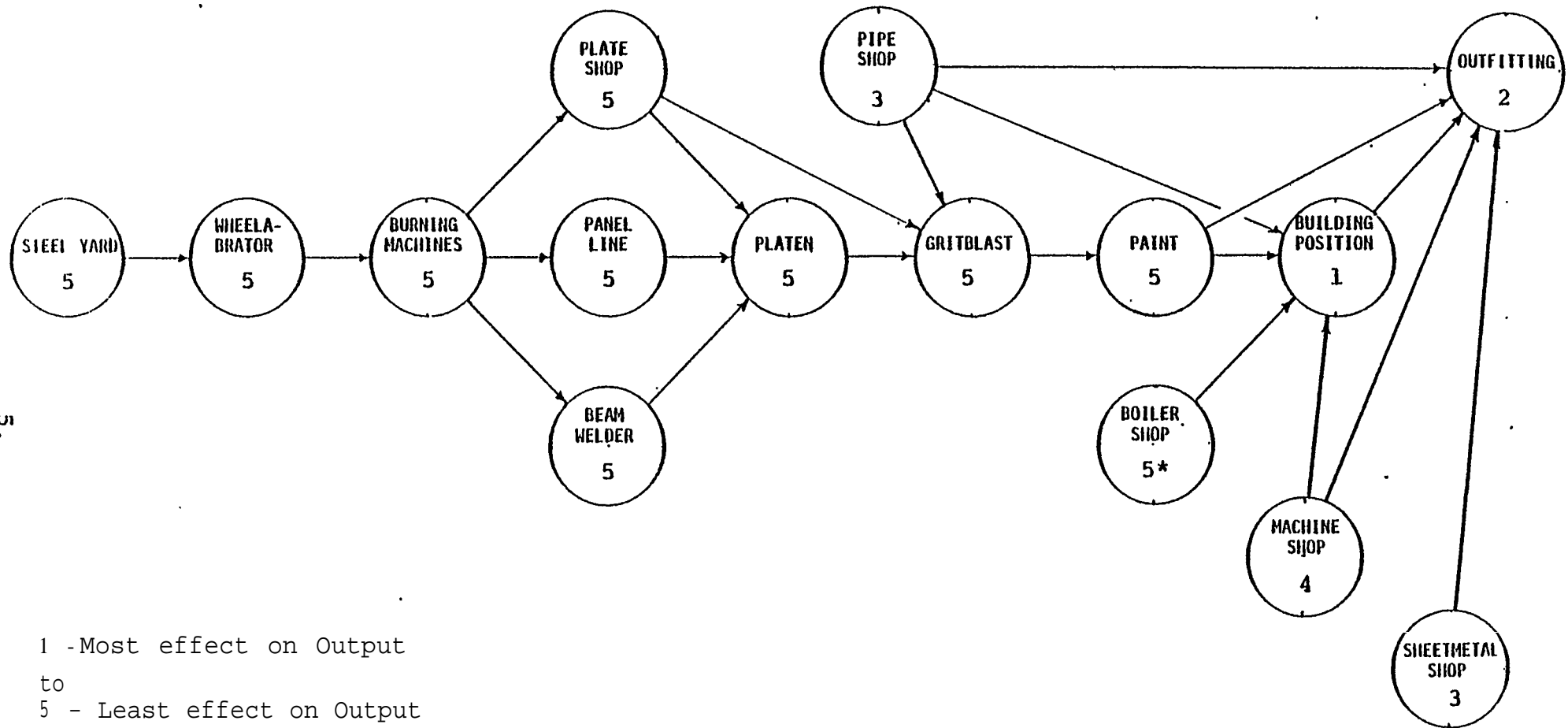
utput . Two (2) would be the second and so on. The Adjusted Ranking column is an extrapolation of derived data and personal input as to the effect these facilities could have on throughput. Again the number one (1) represents the worst case. It should be noted that the Adjusted Ranking does not necessarily represent the actual capacity rankings. For example, the Building Positions and Outfitting Berths have been given Adjusted Rankings of one and two respectively. Yet the majority of one's and two's in the Capacity Ranking columns apply to the Sheetmetal and Pipe Shop. The reasoning behind the shift in ranking is that additional capacity can be achieved *rather* easily by farming out sheetmetal and pipe work. On the other hand, additional capacity cannot be achieved in the same manner for the Building Positions or Outfitting Berths. In order to increase capacity for these two facilities a major change in construction techniques would be required and/or a large outlay of money for additional facilities would be required. Both would take a considerable amount of time before additional capacity could be achieved. It should be noted again that the Adjusted Ranking column is based somewhat on my Personal observations, therefore I suggest that each individual that reads this report draw his own conclusions based on the data presented.

11. CAPACITY PROJECTIONS

For

THE THREE SCENARIOS

CAPACITY CONSTRAINT RANKING



* Could become a 3 if ship propulsion goes back to steam instead of diesels.

CAPACITY CONSTRAINT RANKING LOGIC

The major. new construction facilities have been ranked by the degree of effect they could have on increasing yard throughput . The ranking is on a scale of one to five with one having the most potential of restricting throughput and five having the least effect.

The preceding Capacity Constraint Ranking Graph illustrates all the major facilities and their rankings. The data on this graph represents the formulation of the yard capacity analysis. The following Capacity Protection Chart for the Three Scenarios lists actual vessel capacity per major facility under each scenario; 100 percent Navy work, 100 percent commercial work and 50/50 mix of Navy and commercial. This chart also includes two separate ranking systems, one for each scenario and facility, and the other which is a combination of factors. The later *ranking system is the one* upon which the Capacity Constraint Ranking Graph is based.

The facilities which can have the most influence in restricting yard throughput are the Building Positions and for that reason have been ranked number one. These facilities in the analysis actually indicated a ranking of being a second or third potential restrictor in comparison with Sheetmetal Shop and Pipe Shop. These shops actually have less influence on yard throughput than the Building Positions mainly because Sheetmetal or Pipe Shop work can be farmed out when capacity is reached and this cannot be done with a ship in a building position.

The second most crucial facilities are the Outfitting Berths. These facilities are very much like the Building Positions in that it is highly unlikely that a ship would be farmed out *for* outfitting. For this reason these facilities have been given a ranking of two even though the general ranking was in the four and five range.

The Pipe Shop and Sheetmetal have both been given equal billing as the third most crucial facilities related to yard throughput. Both these facilities received the majority of their ratings in the one's and two's. However, the final rating of three indicates less importance than the original ratings for several reasons. Both of

these shops can overcome capacity constraints rather easily compared to the Building or Berthing Positions. The methods to overcome capacity limitations would be to farm out work, redesign systems so they will accept off-the-shelf items (purchased parts) , standardize material and assemblies, and introduce mechanization.

The Machine Shop has been given a rating of four. The shop has several large machines which are not normally found in local shops . For this reason it would be difficult but not impossible to overcome capacity restraints.

The remaining facilities have all been grouped into the fifth category. These facilities tend to have very little effect on capacity when matched with the capabilities of the Building. Positions. As long as the current building and outfitting techniques are used even the platens will have sufficient output capabilities. If the techniques changed and yard throughput increased substantially it would be very Likely that NASSCO'S ability to move and store material to support these facilities would fall *short*. During the analysis these two areas were addressed but insufficient data existed and the capabilities could not be projected.

CAPACITY PROJECTION CHART

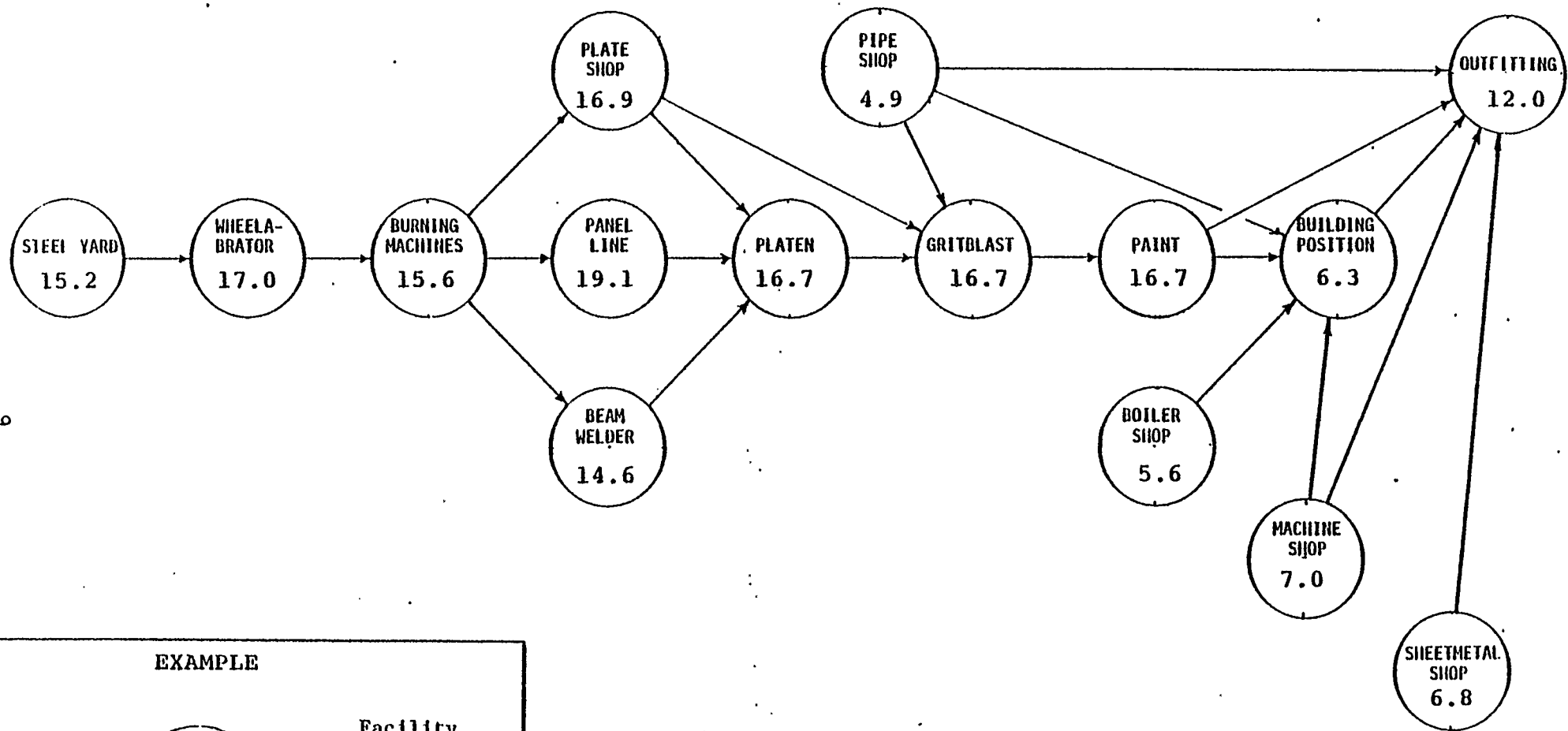
For The THREE SCENARIOS.

Major Facility	100% Navy		100% Commercial		50/50 Navy/Comm.		Adjusted Ranking
	Ships per Year	Capacity Ranking	Ships per Year	Capacity Ranking	Ships per Year	Capacity Ranking	
Refitting Berths	3.3	4	12.0	6	7.7	5	2
Building Positions	2.2	2	6.3	3	4.3	3	1
Paint Area	6.4	7	16.7	10	11.6	8	5
Hot Blast	6.4	7	16.7	10	11.6	8	
Paint Shop	6.4	7	16.7	10	11.6	8	
Paint Line	7.3	10	19.1	13	13.3	12	
Paint Shop	6.5	8	16.9	11	11.8	9	
Painting Machines	6.0	6	15.6	9	10.8	7	
Paint Welder	5.6	5	14.6	7	10.1	6	
Paint Laboratory	6.6	9	17.0	12	11.8	9	
Paint Yard	9.3	11	15.2	8	12.3	10	
Paint Shop	5.6	5	5.6	2	5.6	4	4
Paint Shop	18.4	12	7.0	5	12.7	11	
Paint Shop	.8	1	6.8	4	3.8	1	
Paint Shop	2.8	3	4.9	1	3.9	2	3

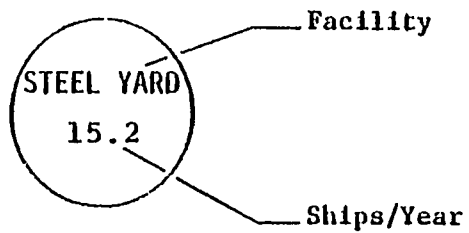
NUMBER OF SHIPS PER PER YEAR BY FACILITY

TYPICAL COMMERCIAL WORK (100%)

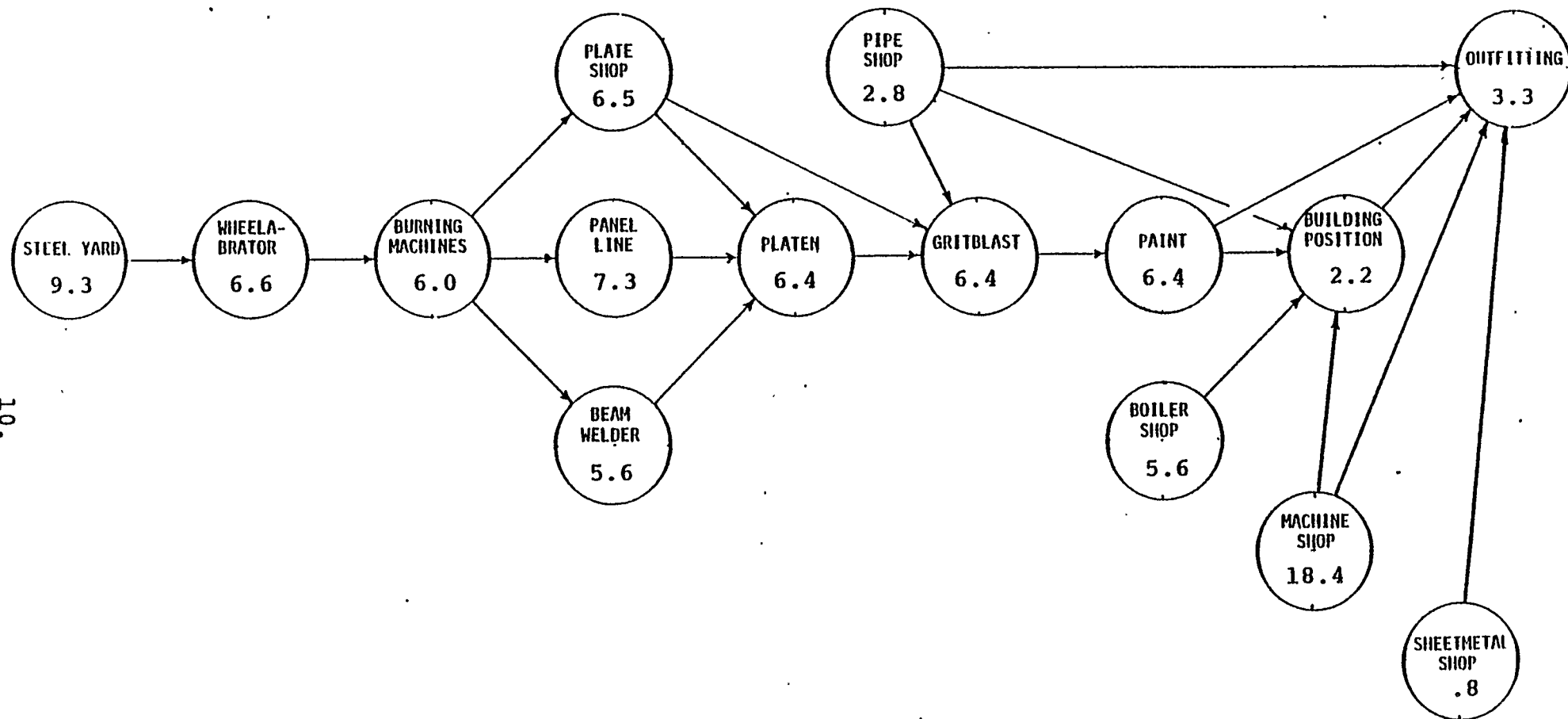
(50/50 Mix Of IPC's & IPC's)



EXAMPLE

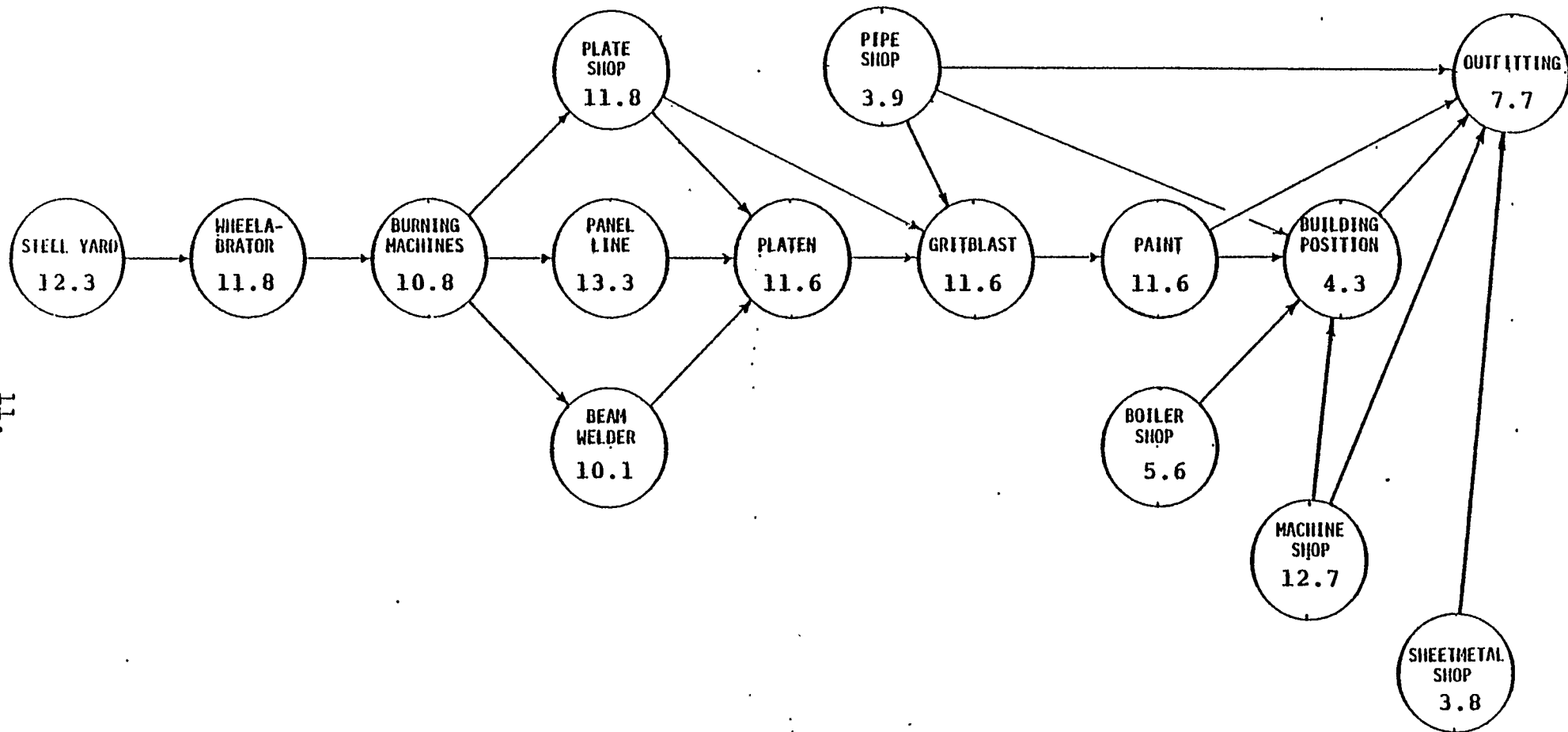


TYPICAL NAVY WORK (100%)
(75/25 Mix of AD's & T-ARC's)



NUMBER OF SHIPS PER YEAR BY FACILITY

50/50 Mix Navy & Commercial



III. POTENTIAL CAPACITY

BOTTLE NECKS

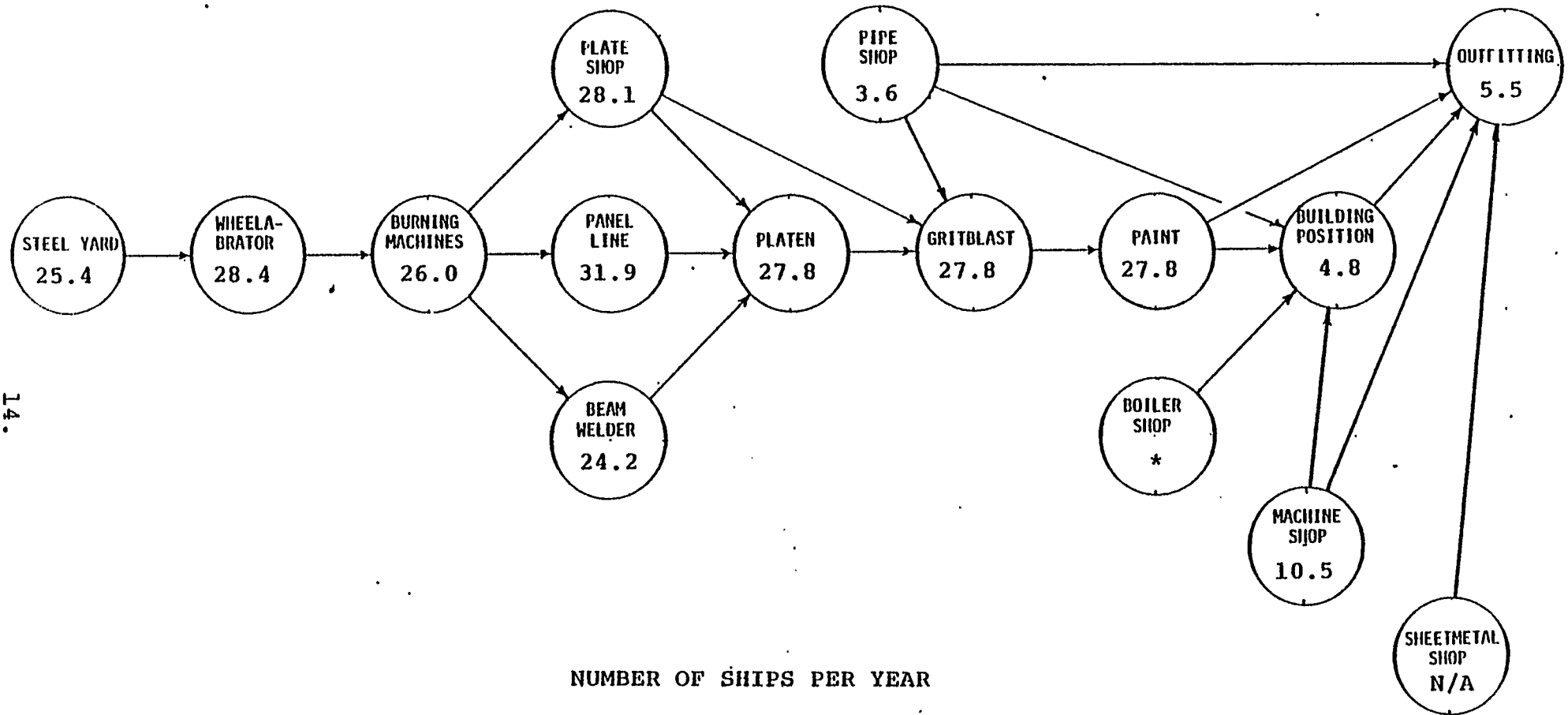
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VESSEL

POTENTIAL CAPACITY BOTTLE NECK MATRIX *

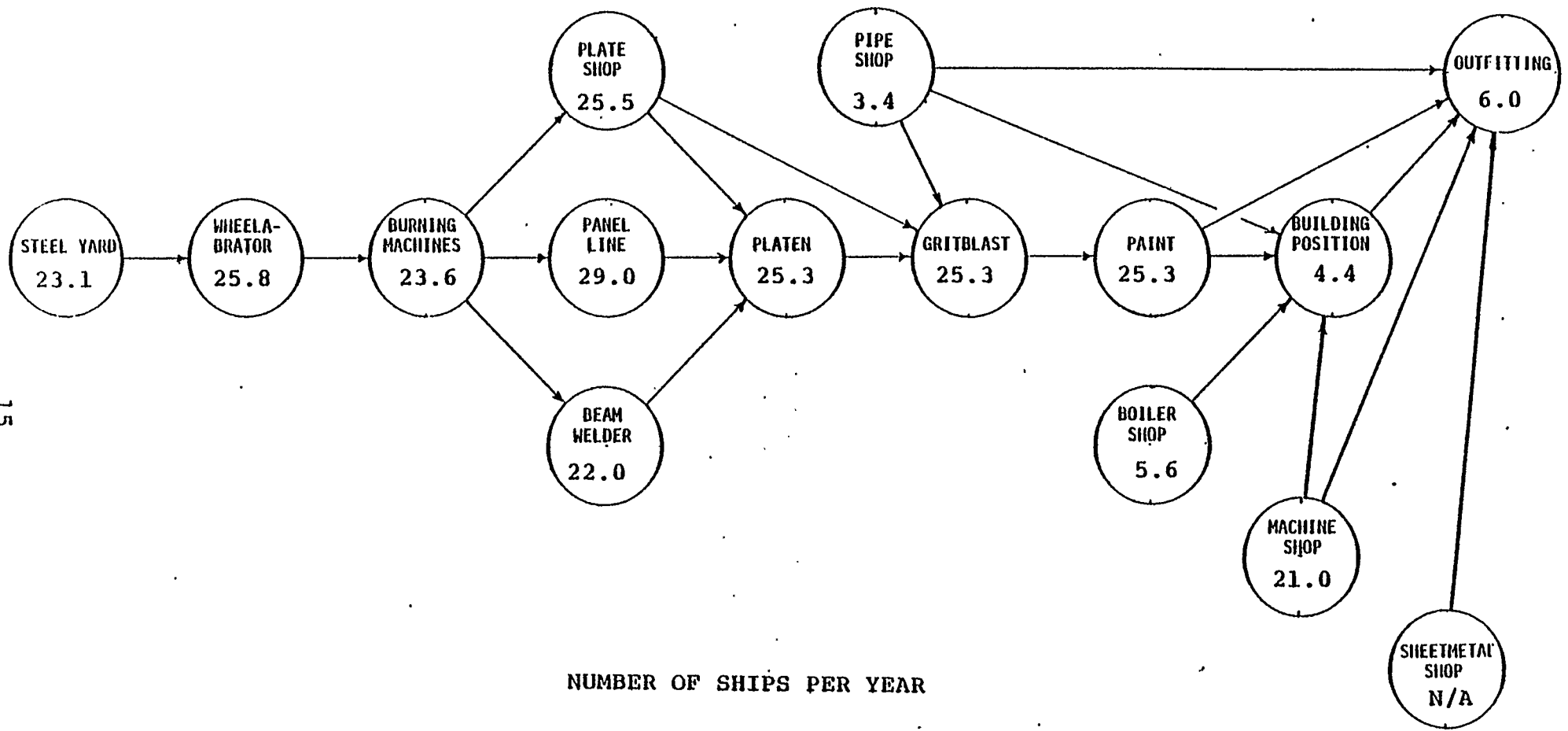
Major Facility	Capacity Indicator	NASSCO Built Vessels Since 1970											
		IST	AFS	AOR	AD	T-ARC	SCT	SDT	CPC	CT	OBO	LPC	IPC
Outfitting Berths	Varies	5.5	6.0	2.2	2.6	5.3	1.7	2.0	10.0	9.6	2.4	12.0	12.0
Building Positions	Varies	4.8	4.4	3.3	2.0	2.7	4.8	1.3	4.5	6.4	4.0	5.5	6.9
Paint	2350 Tons/Week	27.8	25.3	6.2	3.7	14.5	8.7	2.4	11.0	24.7	7.9	15.8	17.5
Grit Blast	2350 Tons/Week	27.8	25.3	6.2	3.7	14.5	8.7	2.4	11.0	24.7	7.9	15.8	17.5
Platen	2350 Tons/Week	27.8	25.3	6.2	3.7	14.5	8.7	2.4	11.0	24.7	7.9	15.8	17.5
Panel Line	2700 Tons/Week	31.9	29.0	7.2	4.2	16.7	9.9	2.7	12.6	28.3	9.0	18.2	20.1
Plate Shop	2375 Tons/Week	28.1	25.5	6.3	3.7	14.7	8.7	2.4	11.1	24.9	8.0	16.0	17.7
Burning Machines	2200 Tons/Week	26.0	23.6	5.8	3.5	13.6	8.1	2.2	10.3	23.1	7.4	14.8	16.4
Beam Welder	2050 Tons/Week	24.2	22.0	5.4	3.2	12.7	7.6	2.1	9.6	21.5	6.9	13.8	15.3
Wheelabrator	2400 Tons/Week	28.4	25.8	6.4	3.8	14.8	8.8	2.4	11.2	25.2	8.0	16.1	17.9
Steel Yard	2150 Tons/Week	25.4	23.1	5.7	3.4	13.3	7.9	2.2	10.0	22.6	7.2	14.5	16.0
Boiler Shop	Varies	Diesel	5.6	3.7	5.6	Diesel	5.6	4.8	5.6	5.6	5.6	Diesel	Diesel
Machine Shop	Varies	10.5	21.0	10.5	21.0	10.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Sheet Metal Shop	10 Pkg./Week	N/A	N/A	1.0	.5	1.5	12.5	12.5	5.6	12.5	12.5	6.8	6.8
Pipe Shop	8560 Lin.Ft./Week	3.6	3.4	2.3	1.6	5.7	3.2	3.1	4.6	3.6	3.5	4.9	4.9

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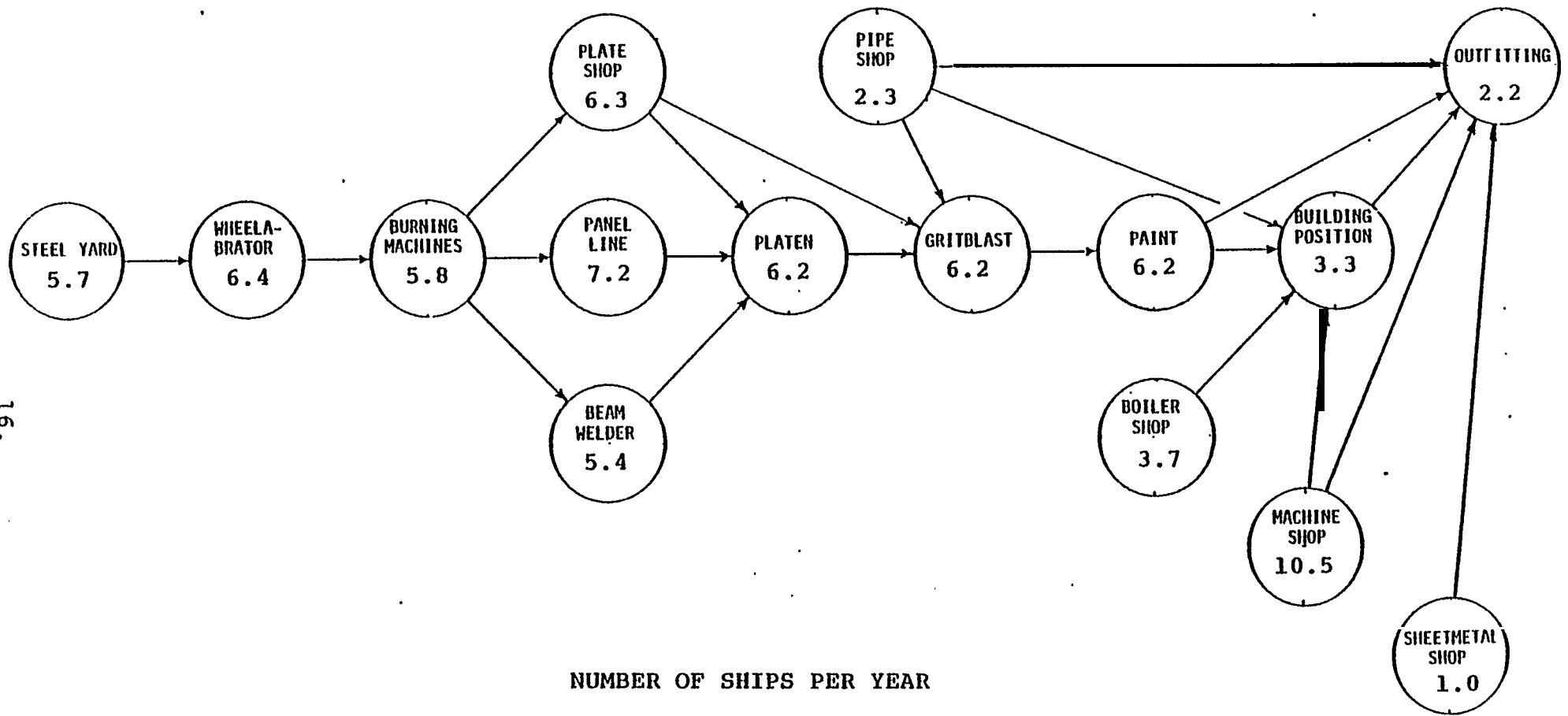


* Diesel powered vessel, boilers not required.

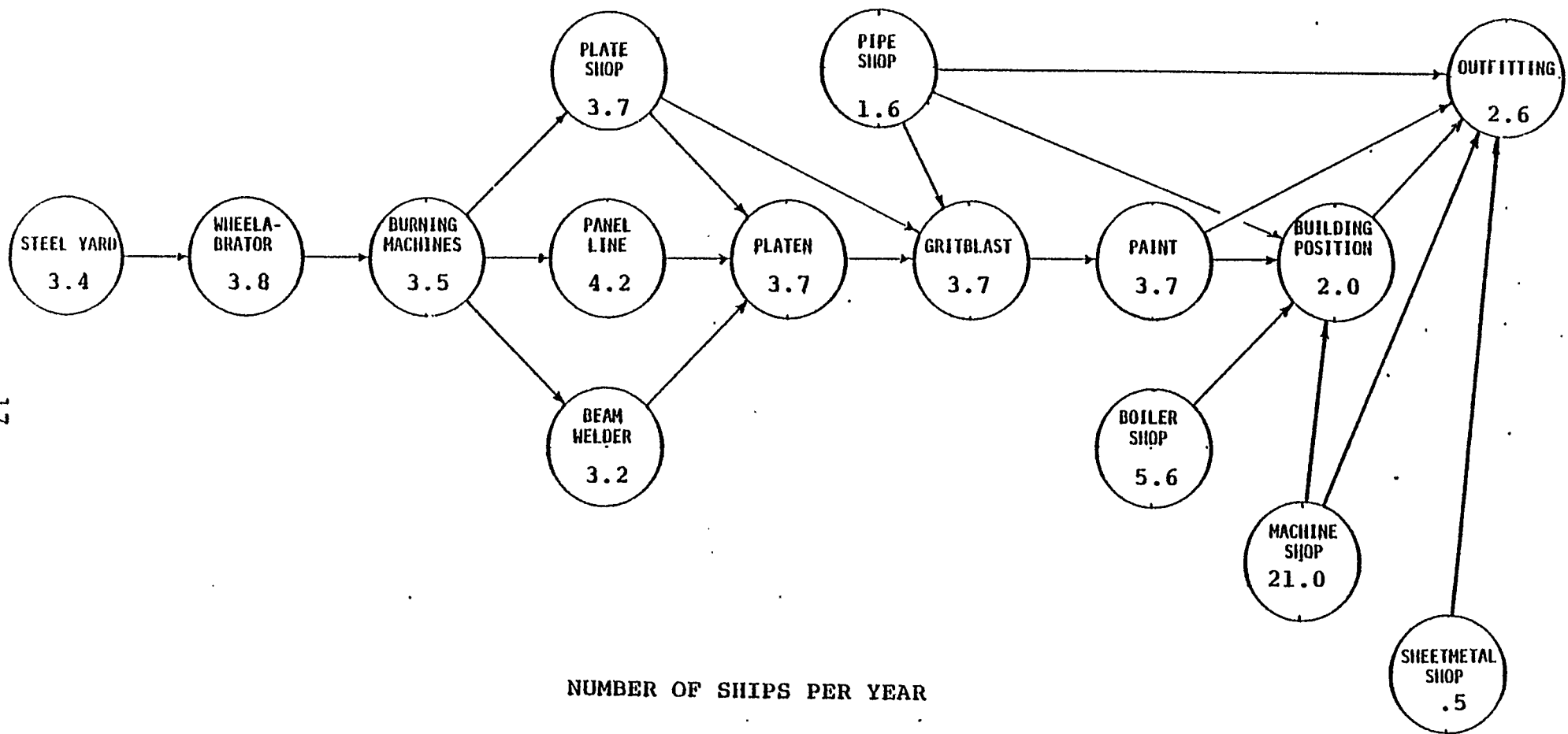
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NUMBER OF SHIPS PER YEAR

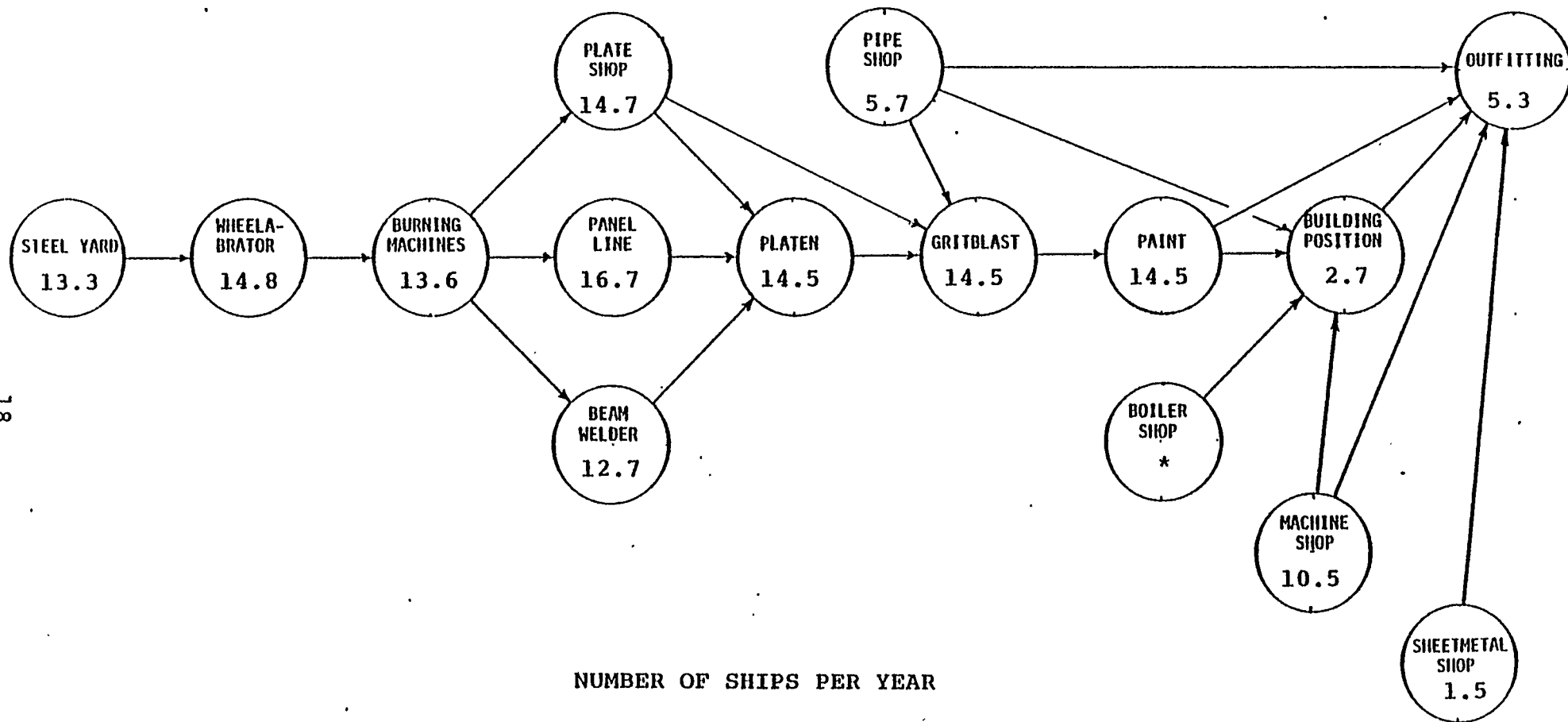


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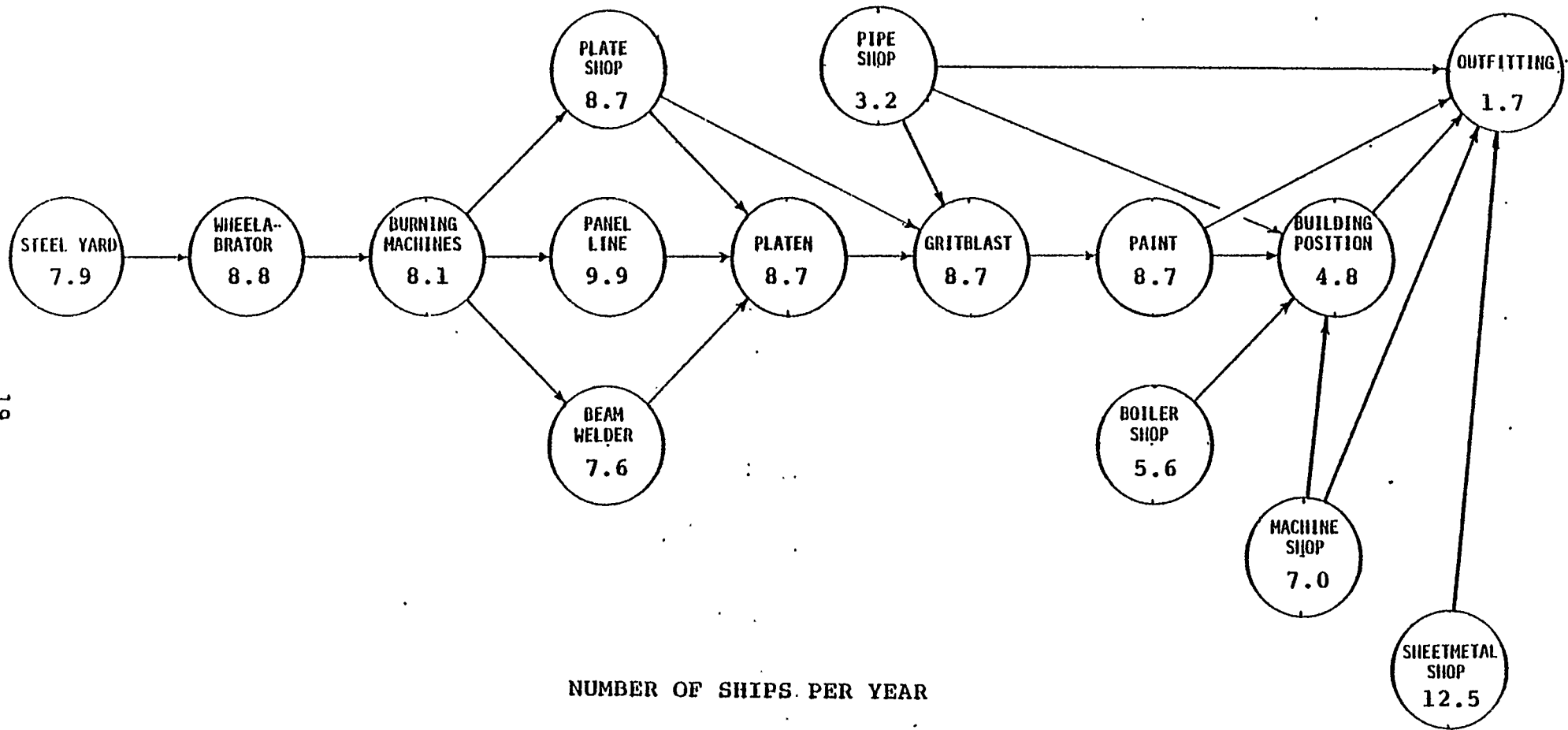
NUMBER OF SHIPS PER YEAR

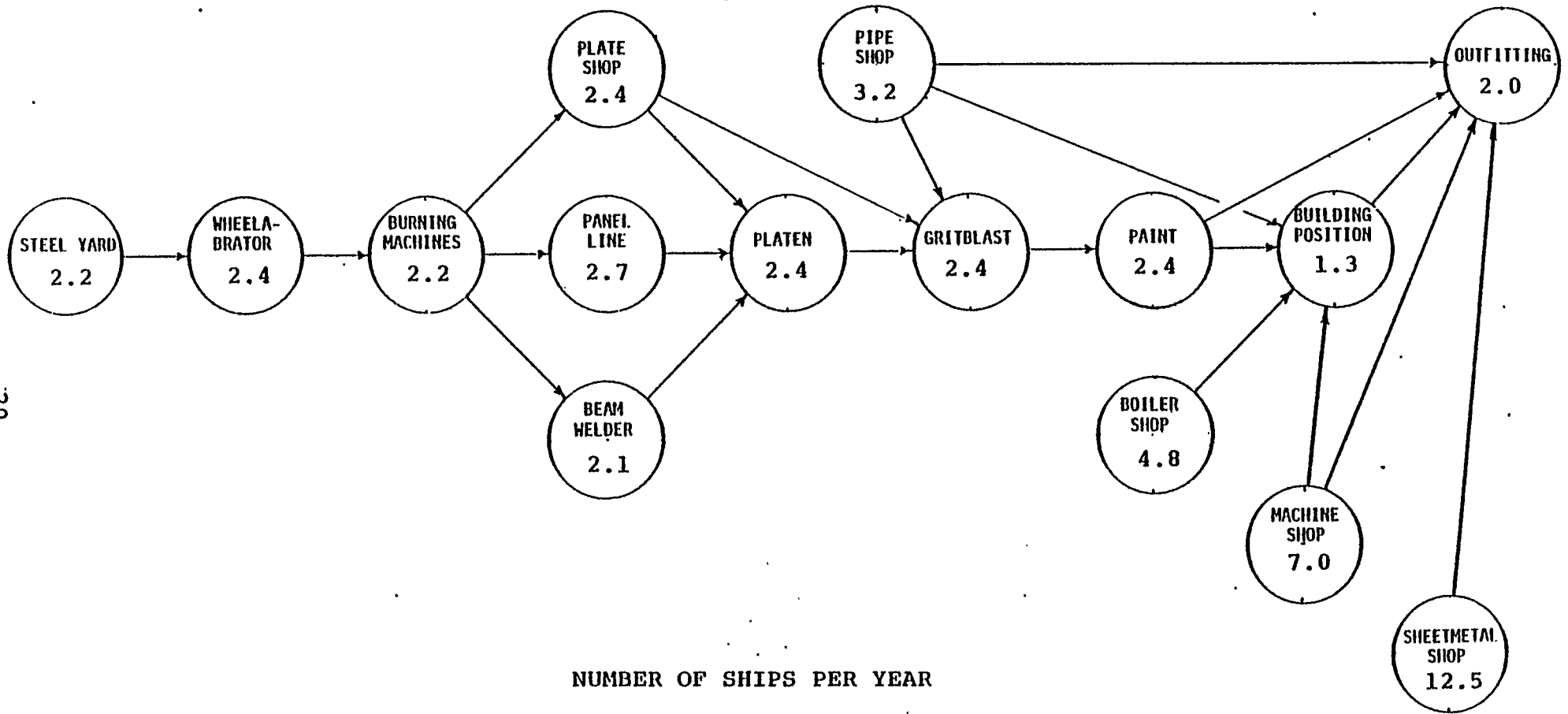
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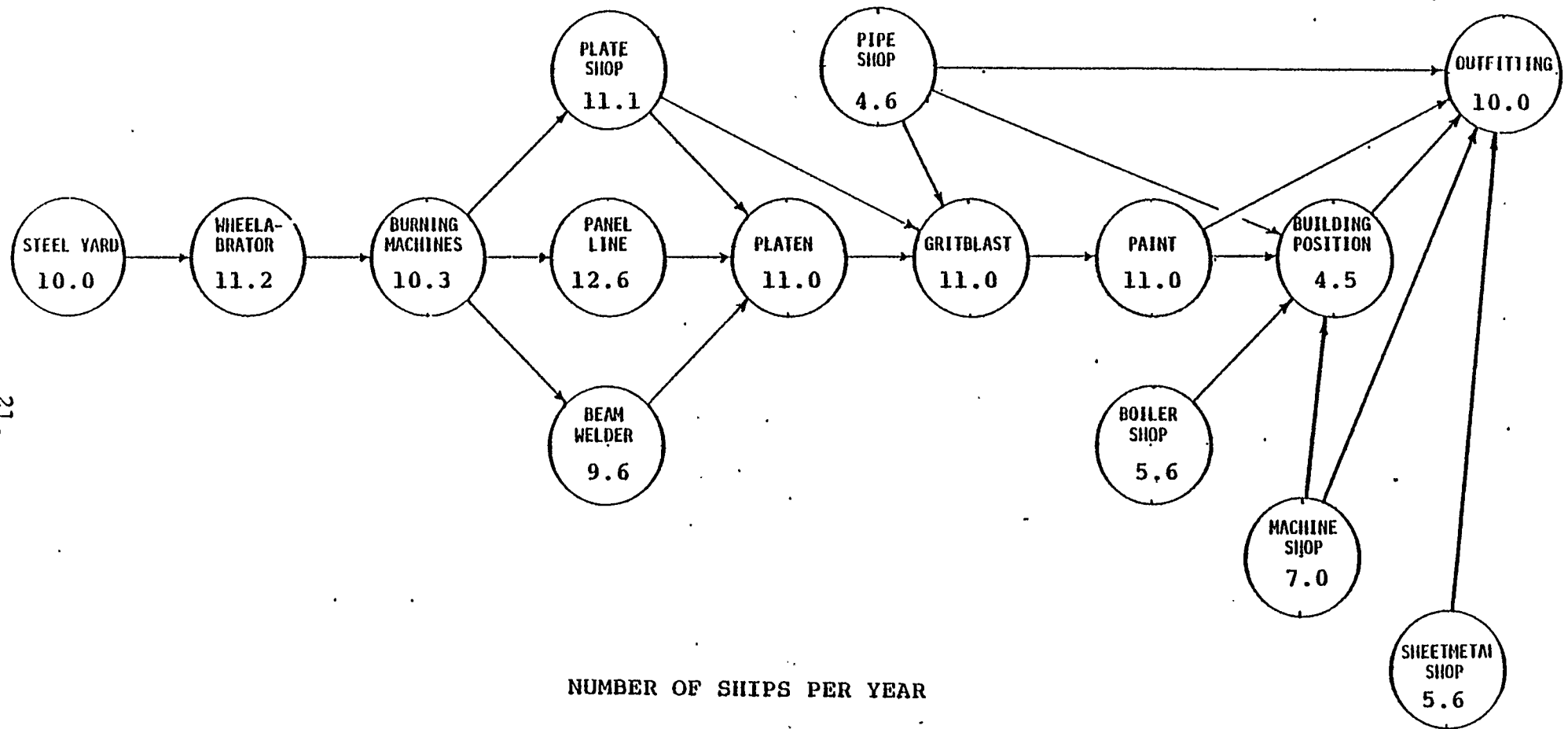
* Diesel powered vessel, boilers not required.

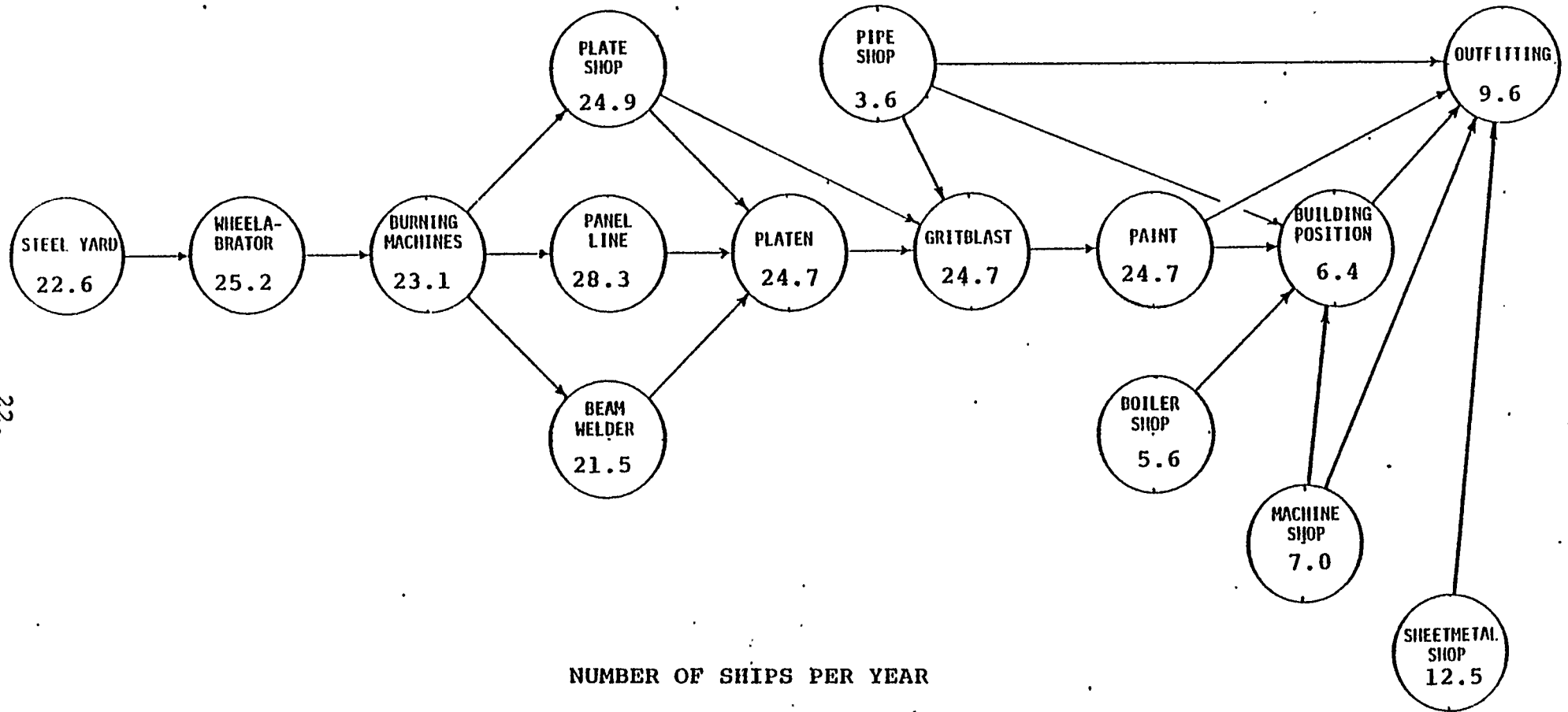
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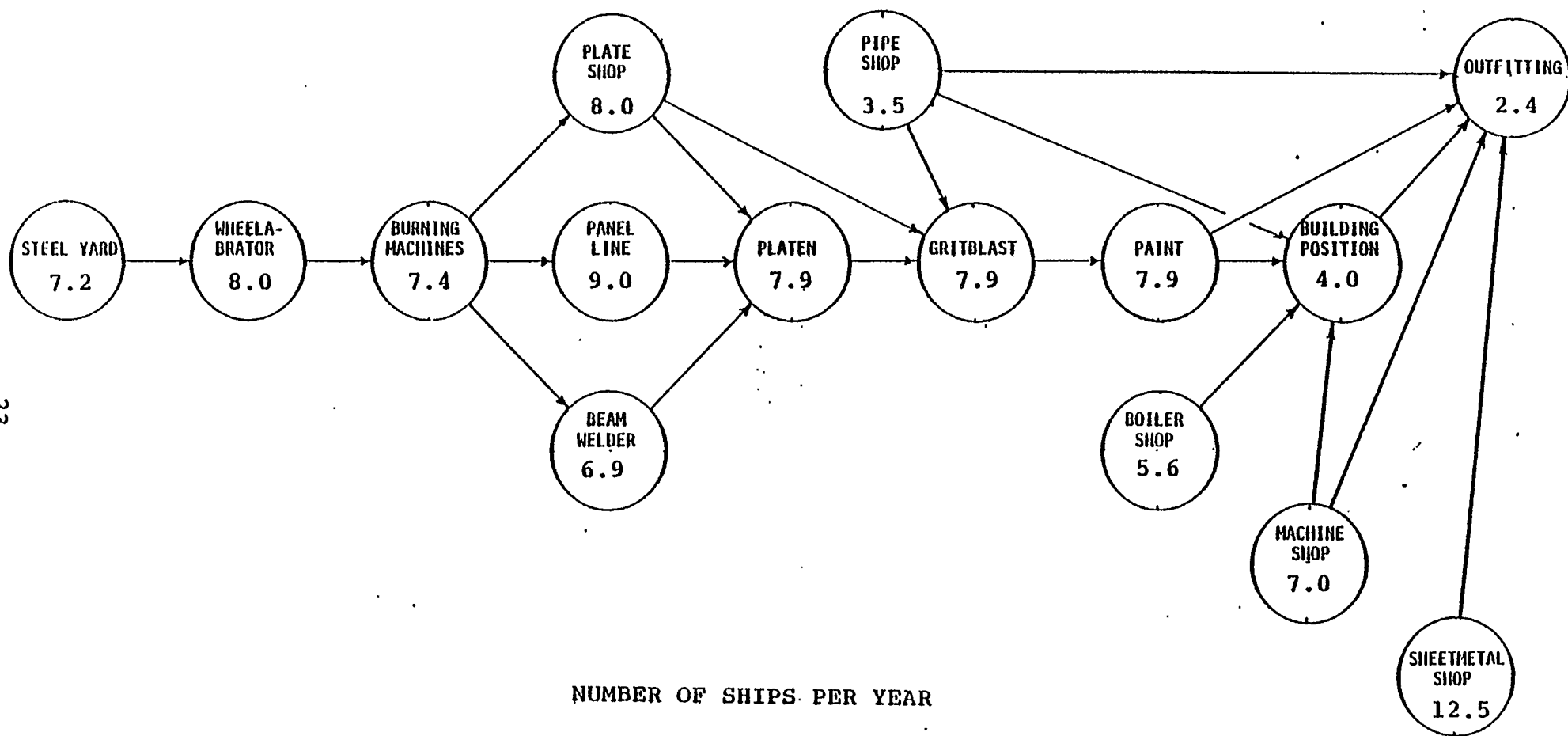
NUMBER OF SHIPS PER YEAR



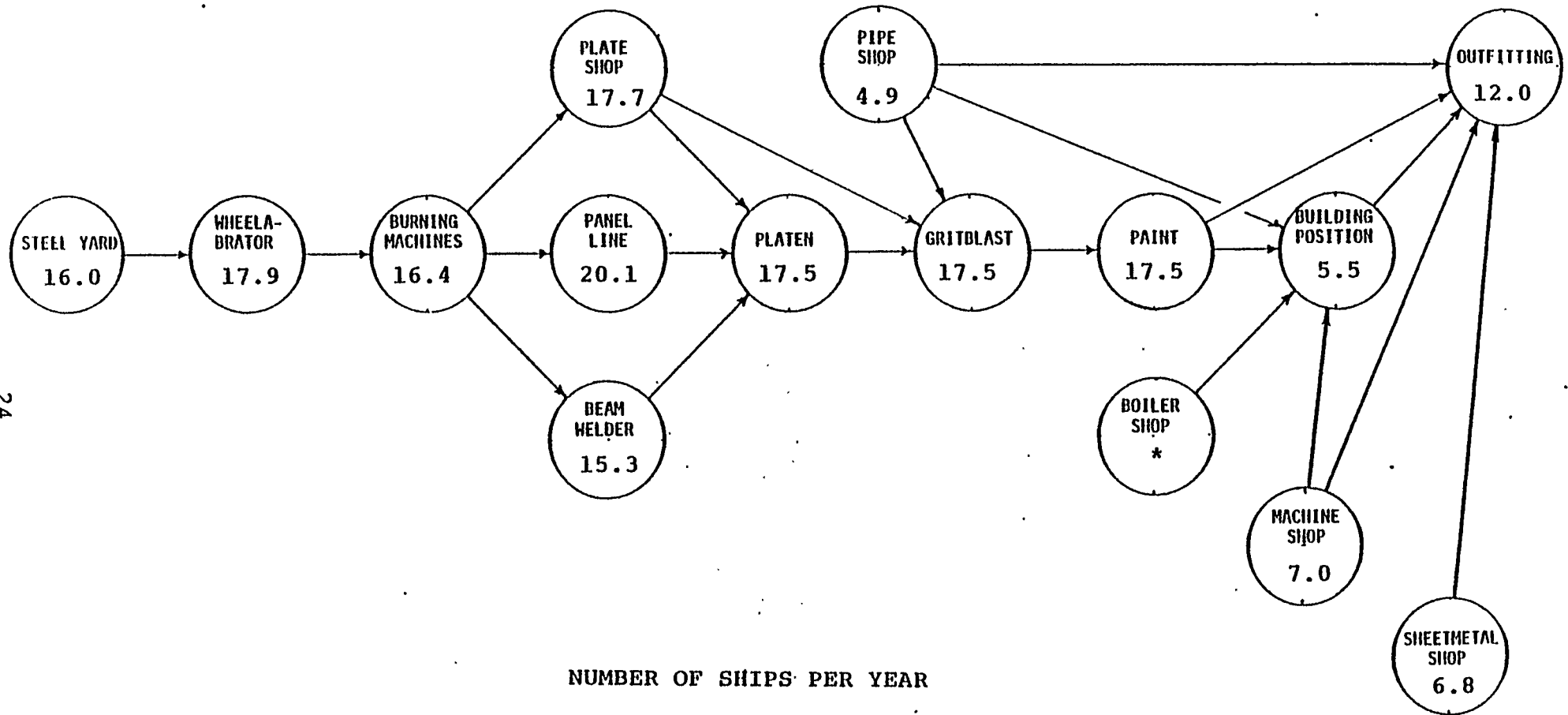


NUMBER OF SHIPS PER YEAR

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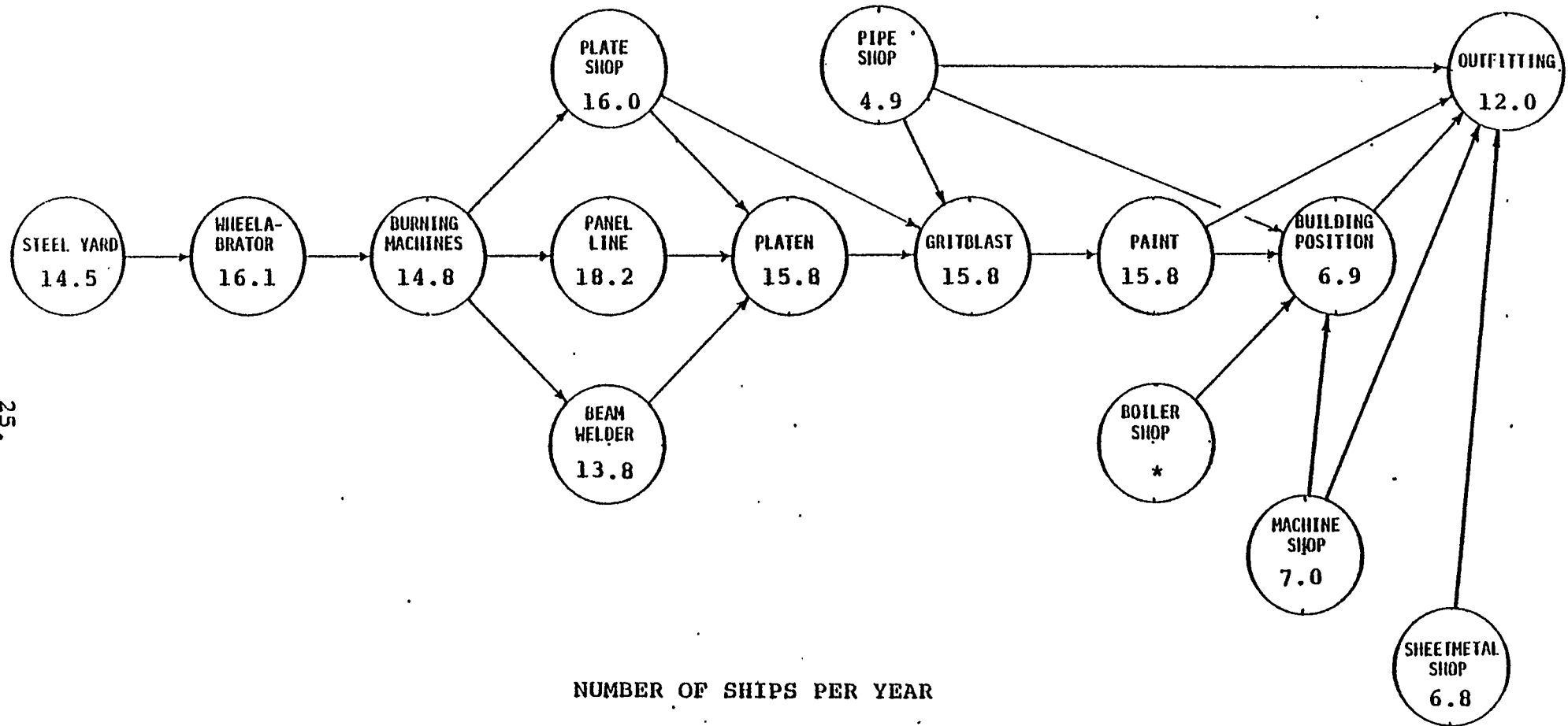
L P C



NUMBER OF SHIPS PER YEAR

* Diesel powered vessel, boilers not required.

I P C



NUMBER OF SHIPS PER YEAR

* Diesel powered vessel, boilers not required.

IV. FACILITIES/CAPACITY DATA

NEW CONSTRUCTION CAPACITY MATRIX*

Major Facility	Capacity Indicator	NASSCO Built Vessels Since 1970											
		LST	AFS	AOR	AD	T-ARC	SCT	SDT	CPC	CT	OBO	LPC	IPC
Outfitting Berths	Varies	5.5	6.0	2.2	2.6	5.3	1.7	2.0	10.0	9.6	2.4	12.0	12.0
Building Positions	Varies	4.8	4.4	3.3	2.0	2.7	4.8	1.3	4.5	6.4	4.0	5.5	6.9
Paint	2350 Tons/Week	27.8	25.3	6.2	3.7	14.5	8.7	2.4	11.0	24.7	7.9	15.8	17.5
Grit Blast	2350 Tons/Week	27.8	25.3	6.2	3.7	14.5	8.7	2.4	11.0	24.7	7.9	15.8	17.5
Platen	2350 Tons/Week	27.8	25.3	6.2	3.7	14.5	8.7	2.4	11.0	24.7	7.9	15.8	17.5
Panel Line	2700 Tons/Week	31.9	29.0	7.2	4.2	16.7	9.9	2.7	12.6	28.3	9.0	18.2	20.1
Plate Shop	2375 Tons/Week	28.1	25.5	6.3	3.7	14.7	8.7	2.4	11.1	24.9	8.0	16.0	17.7
Burning Machines	2200 Tons/Week	26.0	23.6	5.8	3.5	13.6	8.1	2.2	10.3	23.1	7.4	14.8	16.4
Beam Welder	2050 Tons/Week	24.2	22.0	5.4	3.2	12.7	7.6	2.1	9.6	21.5	6.9	13.8	15.3
Wheelabrator	2400 Tons/Week	28.4	25.8	6.4	3.8	14.8	8.8	2.4	11.2	25.2	8.0	16.1	17.9
Steel Yard	2150 Tons/Week	25.4	23.1	5.7	3.4	13.3	7.9	2.2	10.0	22.6	7.2	14.5	16.0
Boiler Shop	Varies	Diesel	5.6	3.7	5.6	Diesel	5.6	4.8	5.6	5.6	5.6	Diesel	Diesel
Machine Shop	Varies	10.5	21.0	10.5	21.0	10.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Sheet Metal Shop	10 Pkg./Week	N/A	N/A	1.0	.5	1.5	12.5	12.5	5.6	12.5	12.5	6.8	6.8
Pipe Shop	8560 Lin.Ft./Week	3.6	3.4	2.3	1.6	5.7	3.2	3.1	4.6	3.6	3.5	4.9	4.9

FACILITY/CAPACITY DATA SHEET

OUTFITTING BERTHS

DESCRIPTION

The primary mission of Outfitting is the completion of a ship after launch or flotation. Typically includes the installation of the many small standard components used in a ship, especially those associated with living facilities.

PRESENT CAPACITY

Outfitting capacity is limited by the number of berths equipped to handle outfitting. NASSCO has ten berthing positions of which six are used for outfitting. Only one (Berth 2) of the six berths can handle all the functions for any types of vessel to make it ready for delivery. The other berths (1, 3, 4, 5 & 6) which are used for outfitting are restricted in use either by depth or length. The remaining berths (7, 8, 9 & 10) for one reason or another are not considered suitable for outfitting. Berths 7 & 8 have limited access and no whirley crane service, therefore are only suitable for berthing barges or tugs. Berths 9 & 10 are considered to be Repair Work berths, however they could be used as backup outfitting positions if needed.

<u>SHIP TYPE</u>	<u>MONTHS IN ⁽¹⁾ OUTFITTING</u>	<u>POSSIBLE BERTHS ⁽²⁾ FOR OUTFITTING</u>	<u>CAPACITY ⁽³⁾ SHIPS PER YEAR</u>
LST	11.0	1, 2, 3, 4, 6	5.5
AFS	10.0	1, 2, 3, 4, 6	6.0
AOR	22.0	1, 2, 4, 6	2.2
AD	14.0	2, 4, 6	2.6
T-ARC	13.5	1, 2, 3, 4, 5, 6	5.3
SCT	7.0	2	1.7
SDT	6.0	2	2.0
OCPC	6.0	1, 2, 4, 5, 6	10.0
CT	5.0	1, 2, 4, 6	9.6
OBO .	5.0	2	2.4
LPC	5.0	1, 2, 4, 5, 6	B12.0
IPC	5.0	1, 2, 4, 5, 6	B12.0

CAPACITY IMPROVEMENT

Additional capacity can be achieved by double berthing at Berth Two, dredging Berths 4, 5 & 6, use Berths 9 & 10 for final stages of outfitting, use off-site berthing, or increase pre-election outfitting activities.

BERTHING POSITION DATA

<u>BERTH NUMBER</u>	<u>MAXIMUM SHIP LENGTH (FT.)</u>	<u>DEPTH M.L.L.W. (FT)</u>
1	620	23-27
2	910	28-32
3	560	28-30
4	625	28-30
5	1,040	23-29,
6	1,090	23-29
7	350	19-22
8	300	19-19
9	8 2 5	2 2 - 2 2
10	775 .	22-22

- (1) Developed from A. J. Nadeau's report HISTORY KEY DATES (Ref. A.).
- (2) Developed from J. Tucker's IDM SHIP DELIVERY SCHEDULE 12/29/79 (Ref. B.).
- (3) (12 Mo. X NO. possible outfitting berths) - months in Outfitting = Capacity.

FACILITY/CAPACITY DATA SHEET

BUILDING POSITIONS

DESCRIPTION

The primary mission of the Building Positions (erection) is the process of assembling all of the erectable units into a complete hull. Erection, strictly speaking, is the process of hoisting and fitting the units in place. Common usage also includes the final welding.

PRESENT CAPACITY

Erection capacity is limited by the four-Building Positions consisting of one Building Basin and three inclined end launch ways. The maximum size vessel which can be erected is 980 feet long, with a breadth of 170 feet and weight of 33,000 tons. All Building Positions are serviced on both sides by whirley cranes ranging in lift capacity from 45 to 175 tons.

<u>SHIP TYPE</u>	<u>MONTHS IN⁽¹⁾ BUILDING POSITION</u>	<u>POSSIBLE POSITIONS⁽²⁾ FOR BUILDING</u>	<u>CAPACITY⁽³⁾ SHIPS PER YEAR</u>
LST	10.0	1, 2, 3, 4	4.8
AFS	11.0	1, 2, 3, 4	4.4
AOR	11.0	1, 3, 4	3.3
AD	18.0	2, 3, 4	2.0
T-ARC	13.5	2, 3, 4	2.7
SCT	7.5	1, 3, 4	4.8
SDT	9.5	1	1.3
CPC	8.0	1, 3, 4	4.5
CT	7.5	1, 2, 3, 4	6.4
OBO	9.0	1, 3, 4	4.0
LPc	6.5	1, 3, 4	5.5
IPc	7.0	1, 2, 3, 4	6.9

CAPACITY IMPROVEMENT

To increase Building Position throughput the work must be shifted from the Building Position to the yard. This can be accomplished in a number of ways, such as erecting larger units, use of modular construction, and pre-erection outfitting techniques.

BUILDING POSITION DATA

<u>BUILDING POSITION NUMBER</u>	<u>TYPE BUILDING POSITION</u>	<u>MAXIMUM SHIP LENGTH (FT.)</u>	<u>MAXIMUM BEAM (FT.)</u>	<u>MAXIMUM LAUNCH WEIGHT (TONS)</u>	<u>MAX&MOM DWT</u>
1	Basin	980	170	33,000	200,000
2	Inclined Ways	690'	90	12,000	40,000
3	Inclined Ways	900	106	16,800	90,000
4	Inclined Ways	900	106	16,800	90,000

- (1) Developed from A. J. Nadeau's report HISTORY KEY DATES (Ref. A.).
- (2) Developed from J. Tucker's IDM SHIP DELIVERY SCHEDULE 12/29/79 (Ref. B.).
- (3) $(12 \text{ Mo.} \times \text{No. possible building positions}) \div \text{months in building positions} = \text{Capacity.}$

FACILITY/CAPACITY DATA SHEET

PRE-ERECTION PAINT -

DESCRIPTION

The mission of the Pre-erection Paint Area is the priming of erectable units. This operation typically occurs just after the unit has been grit blasted to bare metal. The primer protects the metal until the finish coats are applied either in the Building Position or in Outfitting.

PRESENT CAPACITY

Pre-erection Painting is presently being performed under a blue-sky set-up, located in the east end of the yard. The throughput of this area has been established at 2,350 tons of steel per week ⁽¹⁾ on a continuous basis. This is based on NASSCO'S typical two shift operational mode, using approximately 50,000 sq. ft. of yard space.

SHIP TYPE	SHIP ⁽²⁾ STEEL <u>WEIGHT (TONS)</u>	PAINT AREA CAPACITY <u>TONS/WEEK</u>	EQUIVALENT ⁽³⁾ S a n <u>RATIO</u>	CAPACITY ⁽⁴⁾ SHIPS <u>PER YEAR</u>
LST	6,607	2,350	.64	27.8
AFs	5,170	2,350	.90	25.3
AOR	8,661	2,350	2.18	6.2
AD	8,046	2,350	3.96	3.7
T-ARC	5,400	2,350	1.50	14.5
SCT	13,573	2,350	1.00	8.7
SDT	28,524	2,350	1.75	2.4
CPC	8,858	2,350	1.21	11.0
CT	6,619	2,350	.72	24.7
OBO	15,540	2,350	.96	7.9
LPC	9,291	2,350	.80	15.8
IPc	8,182	2,350	.82	17.5

CAPACITY IMPROVEMENT

Capacity can be increased rather easily just by allocating additional blue-sky space and the purchase of painting equipment (gUnS and paint p0Sts) This area should never be a bottleneck to yard throughput.

- (1) Taken from CAPACITY DEVELOPMENT MATRIX.
- (2) Derived from STATUS OF STEEL REPORT.
- (3) Taken from EQUIVALENT SHIP RATIO'S (Ref. C.) (Also could be called a difficulty or complexity factor).
- (4) $(50 \text{ Wks} \times 2350 \text{ Tons/Wk.}) \div (\text{Ship steel} \times \text{equiv. ship ratio}) = \text{Capacity}$.

FACILITY/CAPACITY DATA SHEET

GRIT BLAST AREA

DESCRIPTION

The Grit Blast facility primary mission is the removal of rust and scale from erectable units in preparation for primer and paint. Grit blasting is performed under a blue-sky set-up located in the east end of the yard.

PRESENT CAPACITY

The throughput of the Grit Blast area has been established at 2,350 tons of steel per week ⁽¹⁾ on a 'continuous basis. The capacity is based on a two shift operation, approximately 100,000 sq. ft. of space and current use of a 32 nozzle set-up.

SHIP TYPE	SHIP (2) STEEL WEIGHT (TONS)	PAINT AREA CAPACITY TONS/WEEK	EQUIVALENT SHIP RATIO	CAPACITY ⁽⁴⁾ SHIPS PER YEAR
LST	6,607	2,350	.64	27.8
AFS	5,170	2,350	.90	25.3
AOR	8,661	2,350	2.18	6 . 2
AD	8,046	2,350	3.96	3.7
T-ARC	5,400	2,350	1.50	14.5
SCT	13,573	2,350	1.00	8.7
SDT	28,524	2,350	1.75	2.4
CFC	8,858	2,350	1.21	11.0
CT	6,619	2,350	.72	24.7
OBO	15,540	2,350	.96	7.9
LPC	9,291	2,350	.80	15.8
IPc	8,182	2,350	.82	17.5

CAPACITY IMPROVEMENT

Capacity can be increased by allocating additional blue-sky space and the addition of blast units. If a short term increase in capacity was required, portable blast pots could be used on a temporary basis.

- (1) Taken from CAPACITY DEVELOPMENT MATRIX.
- (2) Derived from STATUS OF STEEL REPORT.
- (3) Taken from EQUIVALENT SHIP RATIO'S (Ref. C.).
- (4) $(50 \text{ Wks} \times 2350 \text{ Tons/Wk.}) \div (\text{Ship steel} \times \text{equiv. ship ratio}) = \text{Capacity}.$

FACILITY/CAPACITY DATA SHEET

PLATENS

DESCRIPTION

The primary mission of the Platens is the process of assembling two or more plates and/or sub-assemblies to form an erectable unit. The operations performed on the platens include, burning, layout, fitting and welding.

PRESENT CAPACITY

The throughput of the Platens (1-9) has been established at 2,350 tons of steel per week ⁽¹⁾ on a continuous basis. The capacity is based on a two shift operation, with 114,706 sq. ft. of Platens for flat units, and 23,672 sq. ft. of Platen for curved units.

SHIP TYPE	SHIP ⁽²⁾ WEIGHT~FONS)	PLATEN "CAPACITY TONS/WEEK	EQUIVALENT ⁽³⁾ ' S H I P ' RATIO	CAPACITY ⁽⁴⁾ SHIPS PER YEAR
LST	6,607	2,350	.64.	27.8
AFS	5,170	2,350	.90	25.3
AOR	8,661	2,350	2.18	6.2
AD	8,046	2,350	3.96	3.7
T-ARC	5,400	2,350	1.50.	14.5
SCT	13,573	2,350	1.00	8.7
SDT	28,524	2,350	1.75	2.4
CPC	8,858	2,350	1.21	11.0
CT	6,619	2,350	.72	24.7
OBO	15,540	2,350	.96	7.9
LPC	9,291	2,350	.80	15.8
IPC	8,182	2,350	.82	17.5

CAPACITY IMPROVEMENT

Additional Platen capacity can be achieved by adding additional Platen area, up-grade existing Panel Line to include Stiffener Station and add bridge crane service for Platens 5, 6 and 7.

PLATEN DATA

<u>PLATEN No.</u>	<u>TYPE</u>	<u>SIZE (FT.)</u>	<u>AREA (SQ. FT.)</u>
1	Flat	55 x 790	43,450
2	Curved	44 x 538	23,672
3	Flat	43 x 155	6,077
4	Flat	58 x 171	9,918
5	Flat	43 x 354	15,222
6	Flat	43 x 354	15,222
7	Flat	60 X 104	6,240
8	Flat	58 x 109	6,320
9	Flat	57 x 215	<u>12,255</u>
TOTAL AREA			138,378

- (1) Taken from CAPACITY DEVELOPMENT MATRIX.
- (2) Derived from STATUS OF STEEL REPORT.
- (3) Taken from EQUIVALENT SHIP RATIO'S (Ref. C.).
- (4) $(50 \text{ Wks} \times 2350 \text{ Tons/Wk.}) \div (\text{Ship steel} \times \text{equiv. ship ratio}) = \text{Capacity}$.

FACILITY/CAPACITY DATA SHEET

PANEL LINE

DESCRIPTION

The primary mission of the Panel Line is the fabrication of panel assemblies. The process includes the fitting of two or more plates together and the welding of the seam to form a panel.

PRESENT CAPACITY

The throughput of the Panel Line has been established at 2,700 tons of steel per week ⁽¹⁾ on a continuous basis.. The capacity is based on a two shift operation utilizing a team of four welders, one fitter and one chipper on each shift.

SHIP TYPE	SHIP ⁽²⁾ STEEL WEIGHT (TONS)	PANEL LINE CAPACITY TONS /WEEK	EQUIVALENT ⁽³⁾ SHIP RATIO	CAPACITY ⁽⁴⁾ SHIPS PER YEAR
LST	6,607	2,700	.64	31.9
AFS	5,170	2,300	.90	29.0
AOR	8,661	2,700	2.18	7.2
AD	8,046	2,700	3.96	4.2
T-ARC	5,400	2,700	1.50	16.7
SCT	13,573	2,700	1.00	9.9
SDT	28,524	2,700	1.75	2.7
CPc	8,858	2,700	1.21	12.6
CT	6,619	2,700	.72	28.3
OBO	15,540	2,700	.96	9.0
LPC	9,291	2,700	.80	18.2
IPC	8,182	2,700	.82	20.1

CAPACITY IMPROVEMENT

Additional Panel Line capacity can be achieved by providing a dedicated crane for turning the panels over and removal of finished panels. This would reduce, if not eliminate, the current delays experienced due to poor crane service.

PANEL LINE DATA

Type of Assemblies

. Flat Panels

Limitations

- Plates

Length :. 40' Max.

Width: 10' Max.

Thickness: 1-1/4" Max.

- Panel

Length :, 65' MAX.

Width:. 40' MaX.

Weight: 66 Tons Max.

(1) Taken from CAPACITY DEVELOPMENT MANAGER.

(2) Derived from STATUS OF STEEL REPORT.

(3) Taken from EQUIVALENT SHIP RATIO'S (Ref. C.).

⁴⁾ (50 Wks x 2700 Tons/Wk.) + (Ship steel x equiv. ship ratio) = Capacity.

FACILITY/CAPACITY DATA SHEET

PLATE SHOP

DESCRIPTION

The primary function of the Plate Shop is the fabrication of single parts from raw material such as plate or shape stock. The material is cut, punched, bent, fitted or **welded** to produce **the** required parts.

PRESENT CAPACITY

The throughput of this shop is limited by fabrication space and the high utilization of some important equipment (Plate Shear and 1,000 ton Brake Press) . The maximum output for the Plate Shop has been established at 2,375 tons steel per week⁽¹⁾ on a continuous basis. The capacity is based on a two shift operation, utilizing 90,000 sq. ft. of shop area (includes Platen 10).

<u>SHIP TYPE</u>	<u>SHIP⁽²⁾ STEEL WEIGHT (TONS)</u>	<u>PLATE SHOP " CAPACITY . TONS /WEEK</u>	<u>EQUIVALENT⁽³⁾ SHIP RATIO</u>	<u>CAPACITY⁽⁴⁾ SHIPS PER YEAR</u>
LST	6,607	2,375	.64	28.1
AM	5,170	2,375	.90	25.5
AOR	8,661	2,375	2.18	6.3
AD	8,046	2,375	3.96	3.7
T-ARC	5,400	2,375	1.50	14.7
SCT	13,573	2,375	1.00	8.7
SDT	28,524	2,375	1.75	2.4
CPC	8,858	2,375	1.21	11.1
CT	6,619	2,375	.72	24.9
OBO	15,540	2,375	.96	8.0
LPC	9,291	2,375	.80	16.0
IPc	8,182	2,375	.82	17.7

CAPACITY IMPROVEMENT

Additional Plate Shop capacity ,can be achieved by providing additional fabrication area and additional equipment such as a Plate Shear, 1,000 ton Brake Press, and C-Press.

Taken from CAPACITY DEVELOPMENT MATRIX.

'²⁾ Derived from STATUS OF STEEL REPORT.

'³⁾ Taken from EQUIVALENT SEIP RATIO'S (Ref. C.).

'⁴⁾ $(50 \text{ Wks} \times 2375 \text{ Tons/Wk.}) + (\text{Ship steel} \times \text{equiv. ship ratio}) = \text{CaPacity.}$

FACILITY/CAPACITY DATA SHEET

STATIONARY BURNING' MACHINES

DESCRIPTION

The current steel plate cutting requirements are handled by eight stationary Burning Machines. Each machine has an intended function in the production cycle. For example, the Flame Planer is used to cut webs and flanges for the 'T' Beam Welder and the CM-56 Shape Cutter is used to cut fitting aids.

PRESENT CAPACITY

The stationary Burning Machines as a whole can support a cutting capacity of 2,200 tons steel Per week⁽¹⁾ on a continuous basis. This throughput is based on a two shift operation utilizing all eight machines.

<u>SHIP TYPE</u>	<u>SHIP⁽²⁾ STEEL WEIGHT (TONS)</u>	<u>BURNING MA-S CAPACITY TONS/WEEK</u>	<u>EQUIVALENT⁽³⁾ SHIP RATIO</u>	<u>CAPACITY⁽⁴⁾ SHIPS PER YEAR</u>
LST	6,607	2,200	.64	26.0
AFS	5,170	2,200	.90	23.6
AOR	8,661	2,200	2.18	5.8
AD	8,046	2,200	3.96	3.5
T-ARC	5,400	2,200	1.50	13.6
SCT	13,573	2,200	1.00	8.1
SDT	28,524	2,200	1.75	2.2
CPC	8,858	2,200	1.21	10.3
CT	6,619	2,200	.72	23.1
OBO	15,540	2,200	.96	7.4
LPC	9,291	2,200	.80	14.8
IPC	8,182	2,200	.82	16.4

CAPACITY IMPROVEMENT

Additional cutting capacity can be achieved by converting existing natural gas cutting torches to plasma torches, which have a much higher cutting speed. An additional stationary Burning Machine can always be added to increase capacity.

BURNING MACHINE DATA

<u>MACHINE</u>	<u>TYPE CUTS</u>	<u>TYPE TORCH</u>	<u>MAXIMUM PLATE SIZE (FT.)</u>	<u>NO. TABLES USED SIMO</u>
CM-56 Shape Cutter	Shape & Longitudinal	Natural Gas	10 X 42	1
CM-60-1 Shape Cutter	Shape & Longitudinal	Natural Gas	10 x 40	1
CM-60-2 Shape Cutter	Shape & Longitudinal	Natural Gas	10 x 40	1
CM-70 Shape Cutter	Shape & Longitudinal	Natural Gas	10 X 42	2
CM-100 Flame Planer	Longitudinal	Natural Gas	10 X 42	2
CM-150 Shape Cutter	Shape & Longitudinal.	P l a s m a	1 0 X 4 0	2
CM-160 Shape Cutter	shape & Longitudinal	Natural Gas	10 x 42	2
Flame Planer	Longitudinal	Natural Gas	10 x 42	1

⁽¹⁾ Taken from CAPACITY DEVELOPMENT MATRIX.

⁽²⁾ Derived from STATUS OF STELL REPORT.

⁽³⁾ Taken from EQUIVALENT SHIP RATIO'S (Ref. C.).

⁽⁴⁾ (50 WKS X 2200 Tons/m.) / (Ship Steel x eqUIV. Ship ratio) = capacity.

FACILITY/CAPACITY DATA SHEET

'T' BEAM WELDER

DESCRIPTION

The primary mission of the 'T' Beam Welder is the fabrication of tee's and built-up angles for use as stiffeners and longitudinal in ship construction. The Beam Welder is a very versatile machine in that it can fabricate a wide variety of shapes from stripped plate stock to the specifically required flange and web strength required by the Design Engineering Group.

PRESENT CAPACITY

The throughput of the 'T' Beam Welder has been established at 2,050 tons steel per week⁽¹⁾ on a continuous basis.

SHIP TYPE	SHIP ⁽²⁾ STEEL WEIGHT (TONS)	BEAM WELDER CAPACITY TONS/WEEK	EQUIVALENT ⁽³⁾ SHIP R A T I O	CAPACITY ⁽⁴⁾ SHIPS PER YEAR
L S T	6,607	2,050	.64	24.2
AFS	5,170	2,050	.90	22.0
AOR	8,661	2,050	2.18	5.4
AD	8,046	2,050	3.96	3.2
T-ARC	5,400	2,050	1.50	12.7
SCT	13,573	2,050	1.00	7.6
SDT	28,524	2,050	1.75	2.1
CPC	8,858	2,050	1.21	9.6
CT	6,619	2,050	.72	21.5
OBO	15,540	2,050	.96	6.9
LPC	9,291	2,050	.80	13.8
IPC	8,182	2,050	.82	15.3

CAPACITY IMPROVEMENT

The maximum capacity of 2,050 tons per week can be doubled by adding one additional Flame Planer to support the Beam Welder.

'T' BEAM WELDER DATA

. Limitations

Maximum Beam Length 42'

Maximum Web Width 30"

⁽¹⁾ Taken from CAPACITY DEVELOPMENT MATRIX.

⁽²⁾ Derived from STATUS OF STEEL REPORT.

⁽³⁾ Taken from. EQUIVALENT SHIP RATIO'S (Ref. C.).

⁽⁴⁾ $(50 \text{ WKS} \times 2050 \text{ Tons/Wk.}) / (\text{Ship steel} \times \text{equiv. ship ratio}) = \text{Capacity.}$

FACILITY/CAPACITY DATA SHEET

WHEELABRATOR

DESCRIPTION

The Wheelabrator is an integral part of the material handling system feeding steel plate from the steel yard to production area via the collocator system. The primary mission of the Wheelabrator is to remove mill scale from steel plates and shapes. The Wheelabrator facility is also equipped to apply primer to the blasted material. However, this unit is not currently used as it is not part of NASSCO'S method' of fabrication.

PRESENT CAPACITY

The throughput of the Wheelabrator has been established at 2,400 tons steel per week⁽¹⁾ on a continuous two shift basis.

<u>SHIP</u> <u>TYPE</u>	<u>SHIP⁽²⁾</u> <u>STEEL</u> <u>WEIGHT (TONS)</u>	<u>WHEELABRATOR</u> <u>CAPACITY</u> <u>TONS /WEEK</u>	<u>EQUIVALENT⁽³⁾</u> <u>SHIP</u> <u>RATIO</u>	<u>CAPACITY⁽⁴⁾</u> <u>SHIPS</u> <u>PER YEAR</u>
LST	6,607	2,400	.64	28.4
AFS	5,170	2,400	.90	25.8
AOR	8,661	2,400	2.18	6.4
AD	8,046	2,400	3.96	3.8
T-ARC	5,400	2,400	1.50	14.8
SCT	13,573	2,400	1.00	8.8
SDT	28,524	2,400	1.75	2.4
CPC	8,858	2,400	1.21	11.2
CT	6,619	2,400	.72	25.2
OBO	15,540	2,400	.96	8.0
LPC	9,291	2,400	.80	16.1
IPC	8,182	2,400	.82	17.9

CAPACITY IMPROVEMENT

Additional Wheelabrator capacity can be achieved by installing a shapes wheelabrator, thereby increasing both the throughput of shapes and plates.

WHEELABRATOR DATA

- Average traverse rate through Wheelabrator is **ten** lineal feet per minute.
- Maximum plate width is ten feet.
- . Paint booth has over and under spray capabilities.

⁽¹⁾ Taken from CAPACITY DEVELOPMENT MATRIX.

⁽²⁾ Derived from STATUS OF STEEL REPORT.

⁽³⁾ Taken from EQUIVALENT SHIP RATIO'S (Ref. C.).

⁽⁴⁾ (50 wK X 2400 Tons/Wk.) / (SHIP steel x EQUIV ship ratio) = CHENNAI.

FACILITY/CAPACITY DATA SHEET

STEEL YARD (PLATE STORAGE)

DESCRIPTION

The primary mission of the Steel Yard is the storage of raw steel plate. The yard has 270 potential stack locations which can be stacked to a height of 12 feet. The yard is served by a 15 ton bridge crane which is used to unload incoming steel from rail cars, sort material, shuffle and move material out of storage to the wheelabrator conveyor.

PRESENT CAPACITY

The throughput of the Steel Yard has been established at 2,150 tons of steel per week⁽¹⁾ on a continuous two shift operation.

SHIP TYPE	sol') <u>WEIGHT(TONS)</u>	<u>STEEL YARD CAPACITY TONS/WEEK</u>	<u>EQUIVALENT⁽³⁾ SHIP RATIO</u>	<u>CAPACITY⁽⁴⁾ SHIPS PER YEAR</u>
LST	6,607	2,150	.64	25.4
AFs	5,170	2,150	.90	23.1
AOR	8,661	2,150	2.18	5.7
AD	8,046	2,150	3.96	3.4
T-ARC	5,400	2,150	1.50	13.3
SCT	13,573	2,150	1.00	7.9
SDT	28,524	2,150	1.75	2.2
CPC	8,858	2,150	1.21	10.0
CT	6,619	2,150	.72	22.6
OBO	15,540	2,150	.96	7.2
LPc	9,291	2,150	.80	14.5
IPc	8,182	2,150	.82	16.0

CAPACITY IMPROVEMENT

Additional Steel Yard capacity can be achieved a number of ways as discussed in the Steel Yard Report (Ref. D.) . The most logical approach to increase throughput is to standardize the plate stock. This would increase the present capacity by 560 percent if ever required.

STEEL YARD DATA

- Footprint of Steel Yard - 182,000 sq. ft.
- 270 different stack locations.
- Material received from supplier by: rail car.
- Material move in yard by: 15 ton magnetic bridge crane.
- Material move from yard by: power roller conveyor.

(1) Taken from CAPACITY DEVELOPMENT MATRIX.

(2) Derived from STATUS OF STEEL REPORT.

(3) Taken from EQUIVALENT SEIP RATIO'S (Ref. C.).

(4) $(50 \text{ Wks} \times 2150 \text{ Tons/wk.}) / (\text{Ship steel} \times \text{equiv. ship ratio}) = \text{Capacity.}$

FACILITY/CAPACITY DATA SHEET

BOILER SHOP

DESCRIPTION

The primary mission of the Boiler Shop is the erection of boilers. These units are used for steam turbine propulsion on board NASSCO-built ships. Vessel propulsion, at present, is tending more toward slow speed diesels than steam and this will reduce Boiler Shop throughput requirements.

PRESENT CAPACITY

The throughput of the Boiler Shop cannot be set on any one key indicator. Each ship type has a unique propulsion setup and must be factored individually. The capacity is based on a two shift operation utilizing a permanent erection fixture with four work stations. The fixture will support the erection of two boiler sets at any one given time.

<u>TYPE SHIP</u>	<u>BOILERS PER SET</u>	<u>FABRICATION P E R BOILER SET</u>	<u>capacity(') SHIPS/year</u>
LST	*	—	—
AFs	2	18	5.6
AOR	3	18	3.7
AD	2	18	5.6
T-ARC	*	—	—
SCT	2	18	5.6
SDT	2	21	4.8
CPc	2	18	5.6
CT	2	18	5.6
OBO	2	18	5.6
LPc	*	—	—
IPc	*	—	—

* Diesel Propulsion

⁽¹⁾ [(s o w s / No.Fab.Wks./Boiler Set) x 4 Work Stations] / No. of Boilers/Set = Capacity.

CAPACITY IMPROVEMENT

No capacity improvements are suggested for this area.

FACILITY. /CAPACITY DATA SHEET

MACHINE SHOP

DESCRIPTION

The primary mission of the new construction portion of the Machine Shop is the machining of shafts. The shaft lathe is the critical piece of equipment that will indicate capacity limitations. There are also a few other pieces of equipment that could have a minor impact "on shop throughput. They are tie planer and vertical boring mills.

PRESENT CAPACITY

The throughput of the Machine Shop can be established by using the following formula:

$$\frac{\text{Maximum Yearly Shaft Output}}{\text{No. Shafts} / \text{Adjustment Factor}} = \text{Capacity}$$

The capacity is based on a two shift operation utilizing the current LeBlond shaft lathe which has a 50-inch swing and is .35 feet between centers. Overhead crane" capacity can also limit the size of shafts.

SHIP TYPE	NUMBER OF sCRzWs	NUMBER OF SHAFTS	ADJUSTMENT ⁽¹⁾ FACTOR	MAXIMUM YEARLY SHAFT OUTPUT	CAPACITY ⁽²⁾ SHIPS /YEAR
LST	2	6	3	21	10.5
AFs	1	3	3	21	21.0
AOR	2	6	3	21	10.5
AD	1	3	3	21	21.0
T-ARC	2	6	3	21	10.5
SCT	1	3	1	21	7.0
SDT	1	3	1	21	7.0
CPC	1	3	1	21	7.0
CT	1	3	1	21	7.0
OBO	1	3	1	21	7.0
LPC	1	3	1	21	7.0
IPc	1	3	1	21	7.0

CAPACITY IMPROVEMENT

Additional Machine Shop capacity can be achieved by adding an NC shaft lathe with a 60-inch swing and 45 feet between centers (so long as no crane capacity problems develop).

- (1) Adjustment factor used to indicate the reduced time required for machining hollow shaft type of ships.
- (2) Capacity calculated on mentioned formula.

FACILITY/CAPACITY DATA SHEET

SHEETMETAL SHOP

DESCRIPTION

The primary mission of the Sheetmetal Shop is the fabrication of duct work for shipboard ventilation. The processes include the layout, cutting, forming, assembly and welding of sheetmetal to fabricate ducting.

PRESENT CAPACITY

The throughput of the Sheetmetal Shop can be established by using the following formula:

$$\frac{\text{Maximum Packages}^{(1)} \text{ Per Week} \times 50 \text{ Weeks}}{\text{No. Packages}^{(1)} \text{ Per Ship}} = \text{capacity}$$

The capacity is based on a two shift operation which was typical in August 1980.

SHIP TYPE	NO. PACKAGES PER SHIP(2)	MAXIMUM	CAPACITY(3) SHIPS /YIMR
		" WEEKLY PACKAGE OUTPUT	
LST	N/A ⁽⁴⁾	10	N/A
AFs	N/A ⁽⁴⁾	10	N/A
AOR	500	10	1.0
AD	995	10	.5
T-ARC	330	10	1.5
SCT	40	10	12.5
SDT	40	10	12.5
CPC	90	10	5.6
CT	40	10	12.5
# OBO	40	10	12.5
LPC	73	10	6.8
IPc	73	10	6.8

CAPACITY IMPROVEMENT

No capacity improvements are suggested as this area is under considerable change at this time.

- ⁽¹⁾ Packages are V-2 & S-2 units that are fabricated in the Sheetmetal Shop.
- ⁽²⁾ Data on packages per ship provided by Harry Sheake, Supv. Vent. Ping.
- ⁽³⁾ Capacity calculated on mentioned formula.
- ⁽⁴⁾ Information not available.

FACILITY/CAPACITY DATA SHEET

PIPE SHOP

DESCRIPTION

The primary mission of the Pipe Shop is to fabricate pipe spools for installation during various stages of vessel construction. The activities utilized to fabricate pipe spools are cutting, bending, cleaning, fitting and welding of ferrous and non-ferrous piping.

PRESENT CAPACITY

The throughput of the Pipe Shop has been established at 8,560 lineal feet of pipe per week⁽¹⁾ on a continuous two shift operation.

<u>SHIP</u> <u>TYPE</u>	<u>LINEAL⁽²⁾ FEET</u> <u>PIPE PER SHIP</u>	<u>MAXIMUM WEEKLY</u> <u>LIN. FT.</u> <u>PIPE OUTPUT</u>	<u>CAPACITY⁽³⁾</u> <u>SHIPS/YEAR</u>
LST	118,355	8,560	3.6
AFs	125,928	8,560	3.4
AOR	183,977	8,560	2.3
AD	264,266	8,560	1.6
T-ARC	74,555	8,560	5.7
SCT	135,073	8,560	3.2
SDT	136,466	8,560	3.1
CPC	92,424	8,560	4.6
CT	117,972	8,560	3.6
OBO	121,823	8,560	3.5
LPc	86,898	8,560	4.9
IPc	87,000	8,560	4.9

CAPACITY IMPROVEMENT

Additional Pipe Shop capacity can be achieved with a minimal investment. The material flow through the Pipe Shop, if corrected with a new layout, would provide a substantial gain in output.

- (1) Taken from CAPACITY DEVELOPMENT MATRIX.
- (2) Taken from W. Sullivan's RIM: PIPE FOOTAGES - PAST & CURRENT NASSCO CONTRACTS June 29, 1981, (Ref. E.).
- (3)
$$\frac{(\text{Max. Wkly. Lin. Ft. Pipe Per Wk.} \times 50 \text{ Wks.})}{\text{No. Lin. Ft. Pipe Per ship L}} = \text{LCapacity.}$$

V, CAPACITY DEVELOPMENT

CAPACITY DEVELOPMENT MATRIX

MAJOR FACILITIES	Facility Capacities ⁽¹⁾	PROJECTIONS			
		Capacity By Shop Supervision	Capacity By J. McQuaide	Capacity By P. & P. C.	Capacity By L. R. F. P.
Outfitting Berths	(2)	---	---	---	---
Building Positions	(2)	---	---	---	---
Paint	2350 Tons/Wk	2200	3000	2500	1700
Grit Blast	2350 Tons/Wk	2200	3000	2500	1700
Platen	2350 Tons/Wk	2300	3000	2500	1700
Panel Line	2700 Tons/Wk	2300	3000	2500	3000
Plate Shop	2375 Tons/Wk	2300	3000	2500	1700
Burning Machines	2200 Tons/Wk	1600	3000	2500	1700
Beam Welder	2050 Tons/Wk	2000	2200	2200	1700
Wheelabrator	2400 Tons/Wk	2000	3000	2500	2100
Steel Yard	2150 Tons/Wk	1600	3000	2500	1500
Boiler Shop	(2)	---	---	---	---
Machine Shop	(2)	---	---	---	---
Sheetmetal Shop	10 Pkg/Wk	21 Ships/Yr	---	10 Pkg/Wk	---
Pipe Shop	8560 Lin.Ft/Wk	8000	---	8000	9700

(1) The figures in this column have been established by averaging the four Capacity Projection columns.

(2) Refer to the appropriate Facility/Capacity Data Sheet Present Capacity Chart.

CAPACITY DEVELOPMENT MATRIX COLUMN DESCRIPTIONS

MAJOR FACILITIES

Those facilities which could have a major effect on yard throughput have been included in this column. Shops such as the Electric Shop, Foundry and Carpenter Shop have not been included in this list for such reasons as: a major portion of work is repair or overhaul related, non-marine oriented work, or only minimal shop facilities are required to support aboard ship work.

0 FACILITY CAPACITIES

The figures printed in this column have been established for projecting throughput capacity constraints. The data was generated by averaging the capacity projections as determined by four different sources. Due to the variations in capacity numbers, the projections for each facility have been averaged to provide a realistic capacity indicator. This indicator is only good as long as the same performance level in each shop is maintained. If the performance decreases, so will the output. However, if it is improved our capacity will also increase.' It should be noted that NASSCO has a tremendous amount of untapped capacity in this respect.

e CAPACITY PROJECTION BY SHOP SUPERVISION

The data in this column was derived from a survey that was conducted in late 1980. Each shop supervisor was asked to provide data on their area of influence. The main objective of 'Ae survey was to have each person estimate their maximum potential capacity and reasons for not being able to exceed those figures.

● CAPACITY PROJECTION BY J. J. McQUAIDE

Mr. McQuaide, former Vice President of NASSCO Yard Operations, and presently a consultant at NASSCO, provided the following insight on capacity. His projections are based on the fact we can-reduce and minimize production problems, and return to producing similar class of ships such as the Coronado and San Clemente

tankers . He also stated that to reach his projections NASSCO would have to keep the number of new ship designs introduced into production at one time to a minimum.

● CAPACITY PROJECTION BY PLANNING AND PRODUCTION CONTROL (P. & P.C.)

Mr. Arden Mann was appointed by Mr. K. K. Christensen to be the Planning and Production Control Department's input coordinator on "capacity projections. Arden provided and validated capacity figures from such sources as past studies, Planning and Production Control personnel and records, and personal experience.

● . CAPACITY PROJECTION BY NASSCO'S LONG. RANGE .FACILITY PLAN (L.R.F.P.)

The LRFP capacity figures were developed using ratios derived from historical production records and facilities information dating back to 1968. This data along with present capacity studies taking into account present methods and performance levels, provides the foundation for the capacity indicators shown in this column.

VI, SHIP DATA

SHIP CHARACTERISTICS

SHIP CLASS	HULL			Steel Weight (Tons)	Steel Assemblies (A-2 Units)	Pipe (Lin. Ft.)	Ventilation (V-2, S-2 Units)	Equiv. Ship Ratio
	Length (Ft.)	Breadth (Ft.)	Draft (Ft.)					
LST	567	68	15	6,607	950 ⁽¹⁾	118,355	N/A	.64
AFS	581	79	24	5,170	290 ⁽¹⁾	125,928	N/A	.90
AOR	659	96	33	8,661	600	183,977	500	2.18
AD	645	85	22	8,046	1,540	264,266	995	3.96
T-ARC	512	73	24	5,044	296	74,555	330	1.50
SCT	894	106	49	13,573	610	135,073	40	1.00
SDT	953	166	59	28,524	660	136,466	40	1.75
CPC	659	100	33	8,858	295	92,424	90	1.21
CT	689	90	35	6,619	400	117,972	40	.72
OBO	893	106	46	15,540	630	121,823	40	.96
LPC	659	106	36	9,291	335	86,898	73	.80
IPC	659	90	36	8,182	335	87,000	73	.82

(1) Estimate per Al Gillilan.

SHIP DESIGNATIONS

AFS	Combat Store Ship
LST	Landing Ship Tank
OBO	Ore Bulk Oil Carrier
CT	Coronado Class Tanker
SCT	San Clemente Class Tanker
SDT	San Diego Class Tanker
AD	Destroyer Tender
CPC	Carlsbad Class Product Carrier
T-ARC	Cable Repair Ship
IPC	Ingram Class Product Carrier
LPC	La Jolla Class Product Carrier

VII. YARD DATA

YARD UTILIZATION - SUMMARY

RCE NO.	COMPONENTS	LIN. FT.	SQ. FT.	%
1	PRODUCTION			
	PRIMARY			
	BLUE SKY		1,063,103	23.9
	UNDER ROOF		410,349	
	PERMANENT BLDG'S		212,610	
	PORTABLE BLDG'S		203,606	
	BUILDING DOCK		8,924	
	BUILDING RAYS		166,600	
	DRY DOCK		252,900	
	BERTHS	6,355	20,644	
	SECONDARY			
	BLUE SKY		161,175	3.6
	UNDER ROOF		156,194	
	PERMANENT BLDG'S		7,901	
	PORTABLE BLDG'S		3,716	
			4,265	
2	TRANSPORTATION			
	COLLOCATOR TRACKS		570,600	12.8
	ROADWAYS		21,600	
	ROTATION PIT		541,500	
			7,500	
3	OFFICES			
	PERMANENT BLDG'S		210,196	4.7
	PORTABLE BLDG'S		178,032	
			32,164	
4	SERVICE AND SUPPORT			
	BLUE SKY		63,709	1.4
	UNDER ROOF		340,75	
	PERMANENT BLDG'S		23,634	
	PORTABLE BLDG'S		26,816	
			2,748	
5	PARKING			
	PASSENGER VEHICLES		520,446	11.7
	EMPLOYEE VEHICLES		176,000	
			502,546	

Aug. 1960

REF NO	COMPONENTS	LIN. FT.	SQ. FT	%
G	STORAGE		1857861	41.9
	BUNG SKY		1561636'	
	UNDER ROAD		298,225	
	TOTAL		4451790	100%

BY: J.R. RUECKER
FILE DIST.

PERMANENT BUILDINGS

AUG. 1980

PERMANENT BUILDINGS													AUG. 1980													CRANE SERVICE										SIZES	
Bldg. NO	NAME	DIM.	SQ. FT. UTILIZATION				NO. OF FLOORS	TYPE CONSTRUCTION	AGE	COND.	LOCATION		SERVICE AVAILABLE																2 3 TONS				CAP. TONS				
			FLOOR	MTL STORAGE	ROCKING	TOTAL					ON SITE	OFF SITE	FRESH WATER	SEWAGE	AIR	ELECTRIC	OXYGEN	NAT. GAS	ARGON	CO ₂	NO.	TYPE	CAPACITY TONS	SPAN													
1	ADMINISTRATION	55 X 350	21,646	-	-	21,646	2	STUCCO	30	F	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
2	PAINT SHOP	70 X 300	322	-	-	21,846	1	METAL SIDING	18	F	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
3	GALVANIZING BLUE SKY	25 X 60	-	-	-	1500	1	METAL/WOOD	17	F	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
4	PIPE SHOP	114 X 103	970	-	-	22,220	1	METAL SIDING	30	G	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
5	MATL. EXCHG.	19 X 21	665	-	-	665	2	WOOD	5	G	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
6	ELECTRICAL SHOP	55 X 350	4120	-	-	7540	2	METAL SIDING	20	G	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
7	SHEET METAL SH.	-	2559	-	-	31,613	1	METAL SIDING	20	G/P	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
8	AIR LINE SHOP	100 X 230	33,126	-	-	34,542	3	METAL/MASONRY	8	G	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
9	FOUNDRY	75 X 150	-	-	-	10,080	1	METAL SIDING	30	P	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
10	STORE ROOM	70 X 165	982	-	-	13,103	1	METAL SIDING	20	F	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
11	MAINTENANCE	35 X 200	2,825	-	-	10,475	1	MASONRY	11	P/G	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
12	MACHINIST BATH	16 X 22	-	-	-	352	1	METAL SIDING	22	P	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
13	OUTFITTING OIL	30 X 31	730	-	-	930	1	WOOD	21	P	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
14	ADMIN. ANNEX	105 X 170	34,608	-	-	34,608	2	BRICK	1	E	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
15	PAINT DIVISION	31 X 60	930	-	-	930	1	WOOD	15	F	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
16	LOCKERS	16 X 70	102	-	-	1,530	1	WOOD	20	P	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				

BY: J.R. RUECKER
FATE DEPT.

PERMANENT BUILDINGS

AUG. 1980

PERMANENT BUILDINGS													SERVICE AVAILABLE												2 3 TONS				JIBS					
BUDG. NO.	NAME	DIM.	SQ FT UTILIZATION				NO OF FLOORS	TYPE CONSTRUCTION	AGE	COND	LOCATION ON SITE		HEATING		STEAM		AIR		ELECTRIC		OXYGEN		NAT. GAS		ARGON		CO ₂		NO.	TYPE	CAPACITY TONS		QTY	CAP. TONS
			OFFICE	MIL. STORAGE	PRODUCTS	TOTAL					GRM	PSI	IN/HR	PSI	CFM	PSI	PHASE	AMP	SIZE	PSI	SIZE	PSI	SIZE	PSI	SIZE	PSI								
19	CARPENTER SHOP	15X110	189	-	8801	9590	1	METAL SIDING	35	P	X		100	110	-	-	100	100	120	50	-	-	1	12	-	-	-	-	-	-	-	-	-	
19A	CARPENTER SHED	10X90			3610	3610	1	METAL SIDING	1	E	X								240															
20	WELD REPAIR BAY	40X60	2685	-	-	2685	1	METAL SIDING	32	P	X		50	110	-	-	100	100	120	1	-	-	1	12	-	-	-	-	-	-	-	-	-	
21	SHEDWAYS GIC	11X110	560	-	-	560	1	METAL SIDING	15	G/P	X		-	-	-	-	100	100	120	1	-	-	1/2	12	-	-	-	-	-	-	-	-	-	
22	GRIT BLAST BAY	22X111	621	-	2216 ²⁹	2837	1	WOOD	10	G	X		150	110	-	-	-	-	120	1	-	-	-	-	-	-	-	-	-	-	-	-	-	
23	WASHROOMS-WOMEN	11X30	-	-	390 ⁴	390	1	WOOD	15	F	X		100	110	-	-	-	-	120	1	-	-	1/2	12	-	-	-	-	-	-	-	-	-	
24	WASHROOMS-MEN	11X30	-	-	390 ⁴	390	1	WOOD	15	F	X		100	110	-	-	-	-	120	1	-	-	1/2	12	-	-	-	-	-	-	-	-	-	
26	TELEPHONE SHOP	30X150	2401	7049	2510 ⁵	11960	2	STUCCO	12	F/G	X		-	-	-	-	-	-	120	1	-	-	-	-	-	-	-	-	-	-	-	-	-	
27	RESTROOMS-MEN	24X29	-	-	696 ⁶	696	1	WOOD	15	F	X		100	110	-	-	-	-	120	1	-	-	1/2	12	-	-	-	-	-	-	-	-	-	
28	TOILET ROOM 201-250	11X19	-	-	392	392	1	WOOD	7	F/P	X		-	-	-	-	100	100	120	1	-	-	-	-	-	-	-	-	-	-	-	-	-	
29	TOILET ROOM 251-300	11X27	-	-	600	600	1	METAL SIDING	15	F	X		-	-	-	-	100	100	120	1	-	-	-	-	-	-	-	-	-	-	-	-	-	
31	PAINT EQUIP. RM	12X31	-	-	496	496	1	METAL SIDING	12	F/P	X		-	-	-	-	-	-	120	1	-	-	-	-	-	-	-	-	-	-	-	-	-	
33	ELECTRONIC CLEANING	10X20	-	-	200 ⁸	200	1	WOOD	5	G	X		-	-	-	-	-	-	120	1	-	-	-	-	-	-	-	-	-	-	-	-	-	
42	PAINT EQUIP. ROOM	65X75	3450	-	-	3450	1	WOOD	32	F/P	X		-	-	-	-	-	-	120	1	-	-	1/2	12	-	-	-	-	-	-	-	-	-	
43	WIRE HOUSE	100X130	2516	8300	1155 ⁹	11971	1	METAL SIDING	151	G/F	X		50	100	-	-	-	-	120	1	-	-	1/2	12	-	-	-	-	-	-	-	-	-	
44	WIRE HOUSE	100X110	600	12800	-	50,100	1	METAL SIDING	15	G/F	X		50	100	-	-	-	-	120	1	-	-	1/2	12	-	-	-	-	-	-	-	-	-	
45	WIREHOUSE BAY	15X225	6192	11085	11085	28360	2	CONCRETE	151	G/P	X		50	100	-	-	-	-	120	1	-	-	1/2	12	-	-	-	-	-	-	-	-	-	
46	WIREHOUSE	17X26	442	-	612 ¹	1054	1	METAL SIDING	20	G/F	X		50	100	-	-	-	-	120	1	-	-	1/2	12	-	-	-	-	-	-	-	-	-	
51	ENGINEERING	85X176	29750	-	-	29750	2	METAL SIDING	11	G	X		150	100	-	-	-	-	120	1	-	-	1	12	-	-	-	-	-	-	-	-	-	

(1) AVERAGE FOR LIGHT & EQUIPMENT

BY J.R. RUECKER
F.I.E. DEPT.

PERMANENT BUILDINGS

NOV 1960

Bldg No	NAME	DIM.	SQ FT UTILIZATION				NO OF FLOORS	TYPE CONSTRUCTION	AGE	COND.	LOCATION		SERVICE AVAILABLE				CRANE SERVICE								2 3 TONS		JIBS							
			W/KE	MTL	WOODEN	TOTAL					ON SITE	OFF SITE	FRESH AIR		STEAM		AIR		ELECTRIC		OXYGEN		NAT. GAS		ARGON		CO ₂		NO.	TYPE	CAPACITY		NO.	CAP. TONS
													GPM	PSI	GPM	PSI	CFM	PSI	VOL	AMP	PSI	PSI	PSI	PSI	PSI	PSI	PSI	TONS			MAN			
54	QUALITY RESOURCES	32X103	500	-	-	3060	1	MASONRY	20	F	X	-	-	-	-	-	120	(1)	-	-	-	-	-	-	-	-	-	-	-	-	-			
58	CENTRAL TOWER	13 X 31	550	-	-	550	1	WOOD	15	F	X	-	-	-	-	-	110	(1)	-	-	-	-	-	-	-	-	-	-	-	-	-			
59	TEMP. STORAGE	21 X 40	-	-	920	920	1	METAL SIDING	10	F	X	-	-	-	-	-	120	(1)	-	-	-	-	-	-	-	-	-	-	-	-	-			
60	FLAME PLASMA SHED	40 X 60	-	2400	-	2400	1	METAL SIDING	15	F	X	30	110	-	-	100	100	110	(1)	1/2	75	1/2	12	-	-	-	-	-	-	-	-			
61	LOCKER (2) LOCKER RM	35 X 110	-	1000	1200	3200	1	STUCCO	15	F	X	130	110	-	-	-	120	(1)	-	-	-	-	-	-	-	-	-	-	-	-	-			
62	WELDING SCHOOL	89 X 100	150	2931	5159	1540	1	METAL SIDING	10	F	A	-	-	-	-	200	100	120	(1)	1/2	75	1/2	12	1/2	70	1/2	70	-	-	-	-			
66	WASH LINE ETC.	61 X 165	7167	-	5241	12408	2	METAL SIDING	20	F	X	-	-	-	-	-	110	(1)	-	-	-	-	-	-	-	-	-	-	-	-	-			
68	COMPUTER SERVICES	110 X 210	8415	21075	-	32500	1	MASONRY	25	G	X	100	110	-	-	-	120	110	-	-	3/4	12	-	-	-	-	-	-	-	-	-			
71	EMP'Y CLOTHES RM.	30 X 31	600	-	330	930	1	WOOD	10	F	X	-	-	-	-	100	100	110	(1)	-	-	-	-	-	-	-	-	-	-	-	-			
72	WAREHOUSE	-	-	24400	-	24400	1	MASONRY/METAL	15	G	X	-	-	-	-	-	120	100	-	-	1/2	12	-	-	-	-	-	-	-	-	-			
73	DRYER WAREHOUSE	70 X 112	840	6070	-	6910	2	METAL SIDING	15	F	X	200	110	-	-	200	100	110	(1)	1/2	75	1/2	12	1/2	70	1/2	70	-	-	-	-			
74	W/KE HOUSE	-	-	72000	-	72000	1	INT OF CONCRETE	15	G	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
15	WAREHOUSE	-	-	40000	-	40000	1	-	15	G	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
77	ICE YARD CONTAINER	21 X 31	651	-	-	651	1	WOOD	9	G	X	-	-	-	-	-	110	(1)	-	-	-	-	-	-	-	-	-	-	-	-	-			
78	CONSERVATION HALL	20 X 40	1120	-	-	1120	1	WOOD	10	G	X	-	-	-	-	-	120	50	-	-	1/2	11	-	-	-	-	-	-	-	-	-			
79	VE CHARACTER SHED	20 X 40	914	-	660	1074	1	WOOD	35	P	X	-	-	-	-	-	120	75	-	-	-	-	-	-	-	-	-	-	-	-	-			
183	HOME IN SECURITY	13 X 30	390	-	-	390	1	WOOD	12	F	X	-	-	-	-	-	120	30	-	-	-	-	-	-	-	-	-	-	-	-	-			
181	HOME 2 SECURITY	10 X 20	200	-	-	200	1	WOOD	1	E	X	-	-	-	-	-	120	30	-	-	-	-	-	-	-	-	-	-	-	-	-			

(1) - 100% UTILIZATION FOR CRANE SERVICE.

BY: J. R. RUECKER
F&E DEPT.

PORTABLE BUILDINGS

AUG 1980

BLDG. NO.	UTILIZATION	DIMENSION	SQ. FT.	TYPE CONSTRUCTION	AGE	COND
1	WHEEL ABANDON	8'X6'	48	WOOD		G
2	OFFICE - MGR G.A.	8'X6'	48	↓		G
3				↓		G
4	SHIEL YARD OFFICE	10'X6'	60	STEEL		G
5	TABLE 9	10'X6'	60	↓		G
6	ROD SHACK PANEL LINE	20'X8'-3	167	WOOD		G
7	TABLE 4	10'X8'-2	83	↓		G
8	LOW TABLE	10'X8'-1	81	↓		F
9	SUB ASLY RATEN	10'X6'	60	↓		F
10	PIPE FILTERS N/C	13'X7'-6	101	↓		F
11	A.D. FIRE & SAFETY	20'X8'-3	167	↓		G
12	ROD SHACK N/C	5'-5'X5'-5	29	STEEL		F
13	ROD SHACK N/C	5'-5'X5'-5	29	↓		F
14	WELDING OFFICE N/C	5'-5'X5'-5	29	↓		P
15	PIPE FILTERS	8'-3'X5'-3	43	WOOD		G
16	S/F OFFICE YAYS 3	16'X10'	160	STEEL		G
17	HULL DEPT.	20'X8'-3	167	WOOD		F
18	FITTERS	16'X10'	160	↓		F
19	N/C COORDINATOR	8'-3'X6'-3	52	↓		G
20	ELEC. STORAGE	8'-1'X16'	129	↓		G
21	W/SHCK TOOL ROOM	32'-2'X8'-3	265	↓		F
22	B/DXK MNTL/EXP.	4'X3'-7	14	↓		F
23	B/DXK S/F OFFICE	15'-10'X10'	158	STEEL		F
24	ELEC. SHIP MAINT N/C	10'X6'	60	↓		F
25	O/S MACH TEST N/C	18'-4'X10'	183	WOOD		G
26	A.D. PIPE DEPT. PRINT RM	14'-2'X11'-2	158	↓		G
27	PAINT DEPT.	12'-1'X10'	121	STEEL		P
28	RIGGERS N/C	16'-2'X10'	162	↓		G
29	ROD SHACK N/C	21'-1'X8'-1	170	WOOD		F
30	OUTFITTING (EXPLOITING)	16'X8'-1	129	↓		F
31	LOCKER RM S/F & WELDER	28'-4'X8'-3	234	↓		P
32	PIPE BULL PEN STORAGE	11'-5'X7'-10	89	↓		P
33	PIPE BULL PEN OFFICE	12'-2'X8'-3	100	↓		P
34	OUTFITTING OFFICE	15'-11'X8'-2	130	↓		F
35	GROUND SHACK SEATRUCKS	8'-3'X6'-3	52	↓		G
36	PAINT FIRE EQUIP STORAGE	20'X12'	240	↓		F
37	ELEC. STORAGE N/C	12'-1'X10'	121	↓		P

BLDG. NO.	UTILIZATION	DIMENSION	SQ. FT.	TYPE CONSTRUCTION	AGE	COND
38	O/S MACH N/C	9'-7'X7'-8	75	WOOD		F
39	O/S MACH N/C	15'-6'X7'-8	119	↓		P
40	TEMP ELEC SERVICE	12'-9'X10'-2	130	↓		F
41	ROD SHACK TOOL RM (FINGER PICS)	32'-2'X8'-3	265	↓		G
42	PIPE (PRE ERECTION OFC)	16'-3'X8'-3	134	↓		F
43	PIPE YARD ANNEX STORAGE	12'-3'X8'-3	101	↓		G
44	PAINT DEPT. STORAGE	8'-10'X6'-3	55	↓		G
45	PAINT DEPT. STORAGE PAINT PIT	8'X5'-6	44	↓		P
46	LAYOUT OFFICE	10'-2'X4'-1	42	↓		F
47	PAINT DEPT. 2ND SHIFT	6'-9'X4'-7	31	↓		F
48	PAINT SERVICE 2ND SHIFT	16'X8'	128	↓		F
49	PAINT PIT OFFICE	12'-3'X10'-3	126	↓		G
50	HAIR/HANDLER	10'X6'	60	STEEL		G
51	LOCKER RM (TRANS)	26'-8'X7'-10	209	WOOD		F
52	ROD SHACK (FENTON BLDG)	24'X8'	192	↓		G
53	PLUMBER STORAGE (MAINT)	10'-8'X8'	85	↓		G
54	SANDBLAST EQUIP RM	33'-3'X24'-3	806	↓		G
55	SANDBLAST SUPPLY RM	24'-3'X10'-3	244	↓		G
56	ELEC. MAINT. STORAGE	9'-7'X8'-3	79	↓		G
57	PIPE YARD OFFICE	11'-3'X12'-3	126	↓		E
58	FIRE DEPT. OFFICE	12'-10'X12'-4	200	↓		E
59	FIRE DEPT. STORAGE	16'X7'-1	112	↓		G
60	NO LONGER EXISTING					
61	ROD SHACK RATE SHOP	16'-3'X8'-3	113	WOOD		G
62	PLATE SHOP OFFICE	10'X6'	60	STEEL		F
63	FURNACE OFFICE	10'X6'	60	↓		G
64	HULL EXPEDITION	8'-1'X6'-1	49	WOOD		F
65	NO LONGER EXISTING					
66	PAINT SHOP (SAVAGE) (BARREL SHED)	18'-2'X13'-2	239	WOOD		G
67	S/F OFFICE (Q SHIPWAY)	16'-1'X10'-2	164	↓		G
68	OFFICE - MAINT COORD.	12'-2'X10'-2	124	↓		G
69	MAINT. OFFICE	14'-2'X10'-3	145	↓		G
70	MAINT TOOL RM OFFICE REPAIR	10'X8'	80	STEEL		F
71	TOOL RM (FINGER PICS)	24'-10'X17'-10	503	WOOD		F
72	ELEC. OFFICE REP	10'X6'	60	STEEL		G
73	S/F & WELDER REP	16'-2'X8'-2	132	WOOD		F
74	TOOL ROOM REP	20'X7'-11	158	STEEL		E

BY: J.R. FUCHER
F I E. DEPT.

· NOTABLE BUILDINGS - CONT'D

סמך. 126

Bldg. No	UTILIZATION	DIMEN'SION	SQ. FT.	TITE CONDITION	AGE	COND.
75	CARPENTER SHOP	12-1 X 8	97	WOOD		G
76	MACH. SHOP/OTKE REP	13-9 X 9-2	160	STEEL		F
77	MACH SHOP STORE REP RM	15-6 X 7-7	118	WOOD		P
78	MACH. STORE ROOM REP	5 X 7	35	STEEL		F
79	PIPE OFFICE REP	12-3 X 7-3	89	WOOD		P
80	PIPE SHOP REP STORE	17-3 X 10-1	174			P
81	WAYS DEPT. N/C	16-4 X 12-10	210			G
82	ELEC. SHOP REP 32 ND ST	12-3 X 6-10	119			F
83	RIGGERS REP 32 ND ST	8-4 X 4-6	38	STEEL		F
84	WAYS DEPT. REP 32 ND ST	6-2 X 6-1	38	WOOD		F
85	-	-	-			G
86	WELDERS REP 32 ND ST	5-5 X 5-5	29	STEEL		F
87	SANDBLAST MNT/CONTROL	12-3 X 8-3	101	WOOD		G
88	WASSCO SHOP REP 32 ND ST	12-3 X 8-3	101			G
89	-	-	-			G
90	-	-	-			G
91	WELDERS REP/DEPT	12-2 X 7-10	95			G
92	TIDFLANDS	16-2 X 8-3	133			G
93	TOOL RM 4 PORTA POWER REPAIR	14-9 X 11-5	253	STEEL		G
94	MACHINERY	24-2 X 10-2	246	WOOD		G
95	MARSHALL'S CAMP	12-2 X 10-2	124			E
96	N/C MGMT PROD	14-2 X 12-2	274			E
97	PIPE DEPT	18-2 X 11-2	257			E
98	O/S MACH. REPAIR	14-1 X 7-8	108	STEEL		G
99	ELECT SHOP REPAIR	16-3 X 7-8	124	WOOD		F
100	TRAILER "H MNT/EXP	22 X 9-11	218	STEEL		E
101	CARPING MILLER COVER 20 TH ST	18-4 X 16	293	WOOD		G
102	OUTFITTING	10-3 X 8-3	85			G
103	N/C CRAP SHOP ANNEX	8 X 8-1	65			G
104	MH TRAILER	60 X 12	720	STEEL		G
105	SANDBLAST	48 X 48	2304			G
106	ASTER FLOORING	15 X 26	390	WOOD		G
107	CALIGO	8 X 16	128			G
108	TELEPHONE STORAGE	10 X 30	300			G
109	SHEETMETAL SHOP	8 X 8	64			F
110	SHIPMENTS OFFICE	8 X 11	61	STEEL		P
111	MH MGMT STORAGE	10 X 8	80			P

[illegible]

By: J. R. PURDY
FILED

TEMPORARY OFFICE TRAILERS

AUG 1960

TRAILER NO.	OCCUPANTS / USE	LOCATION	DIMENSION FT.	SQ. FT.
1	STAFF	BLDG. 1	10 X 55	550
3	INTL. COST ADMIN / BIRCH	BLDG. 1	10 X 45	450
5	PUBLIC RELATIONS	BLDG. 1	10 X 55	550
9	M-K	BLDG. 51	10 X 55	550
11	AD NUCLEUS CREW	BLDG. 51	50 X 55	2750
13	LEAD SHOP	AD LEAD SHOP	10 X 45	450
14	FAC. F. & E.	BLDG. B	10 X 55	550
17	PIPE SMITHERS	BLDG. 1	24 X 60	1440
19	STORE	EXEC LOT	10 X 55	550
22	O.A.	BLDG. B	30 X 60	1800
23	AD 43 PERSONNEL	LEAD SHOP	12 X 60	720
25	ADVANCED PLANNING	BLDG. B	12 X 60	720
26	NAVY O.A.	BUILDING DOCK	12 X 56	672
27	T-ARC	BLDG. B	12 X 60	720
28	OUTFITTING MACHINIST	BLDG. 14	10 X 55 (40)	1100
29	P/P	BLDG. B	12 X 60	720
30	P/P	BLDG. B	12 X 60	720
31	MEDICAL	BLDG. 15	10 X 55	550
32	ENG. MACH. PIPE	BLDG. 51	24 X 60	1440
33	ENG. HULL STRUCT - T-ARC	BLDG. 51	12 X 60	720
34	ENG. MACH. MECH.	BLDG. 51	12 X 60	720
35	UCNA	BLDG. 1	10 X 55	550
36	ELECT. TRNG.	BOILER SHOP	12 X 60	720
37	MAT'L HANDLING	BLDG. 51	12 X 60	720
38	O.A. NUCLEAR	BLDG. 51	12 X 60	720
39	VENDOR KEYS	BLDG. 51	12 X 60	720
40	PERSONNEL	BLDG. 15	10 X 35	350
41	T-ARC	BLDG. B	12 X 60	720
42	P/P	BLDG. B	24 X 60	1440
43	SHIP COORDINATION	WAYS 3 & 4	10 X 55	550
44	TEST COORDINATION	BLDG. 7	12 X 60	720
45	ENG. HULL	BLDG. 51	24 X 60	1440
46	FAC. F. & E.	BLDG. B	10 X 43	430
47	MACHINERY PARTS STR.	BEACH - 1	8 X 20	160
		TOTAL		27,602

TEMPORARY LEASE INK S'CA. 1100	
650	
550	
650	
650	
1050	
550	
650	
810	
650	
900	
720	
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680	
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840	
720	
720	
650	
720	
720	
720	
450	
720	
810	
650	
720	
810	
530	
280	
24,210	51,092 SQ. FT.

BY: J.R. RUECKER
F. J. E. LEPT.

BUILDING DOCK AND WAYS

NOV 1980

BUILDING DOCK AND WAYS															SERVICE AVAILABLE															CRANE SERVICE LIFT CAPACITY															TRACK CAP																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
NO	TYPE	LAUNCHING			DIMENSIONS			MAX SHIP SIZE			DEPTH		AGE	CIVIL	FRESH WATER		STEAM		AIR		ELECTRIC		HEATING		NAT GAS		ARGON		LO		NO	TYPE	AIRLIN		WHIP		TOWS	FT	TOWS	FT	TOWS	FT	TOWS	FT																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
		END	SIDE	TOW	LEN	WID	DEPT	LEN	WID	DEPT	LEN	WID			LEN	WID	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI			PSI	PSI	PSI	PSI									PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI

(1) MOBILE CRANES SUPPLEMENT THE WHIRLEY FLEET.

P PROHIBITED

R RESTRICTED - LIMIT TRAVEL SPEED TO 210 RPM OR LESS, TRAVEL WITH BOWS PARALLEL TO TRACK, CONDUCT ALL LIFT HANDLING MOVEMENTS VERY SLOWLY.

DRYDOCK

DRYDOCK								SERVICE AVAILABLE														NAME SERVICE						
TYPE	NO	LENGTH INSIDE FLOATER OVER KEEL BLOCKS	MAXIMUM DEPTH OVER BLOCKS	CLEAR WIDTH BETWEEN TANG WALLS	LIFT CAPACITY (TONS)	NORMAL KEEL CLACK HEIGHT	MAXIMUM SHIP SIZE	FRESH WATER		STEAM		AIR		ELECTRIC		OXYGEN		NAT GAS		ARGON		CO ₂		NO.	TYPE	CAPACITY		
								GPM	PSI	PSI	PSI	CFM	PSI	VOLTS	AMP	SIZE	PSI	SIZE	PSI	SIZE	PSI	SIZE	PSI			SIZE	PSI	SIZE
FLOATING DRYDOCK	NO. 37	345'-6"	19'	50'	2,800	4'	337' X 52'	3100	110	-	-	500	110	110	110	110	110	110	110	110	110	110	110	110	3701	PARTIAL	13.5	42
GRABING DRYDOCK	#1	601' 3"	36' 6"	36' 6"	N/A	5'-11"	600' 6" X 91'	3100	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	3701	PARTIAL	12.1	50

(1) LENGTH OVER BLOCKS PLUS 15%

BY: J.R. RUCKER
1 E. DEPT.

BERTHS

AUG. 1980

										SERVICE AVAILABLE														CRANE SERVICE@														
NO.	TYPE	LENGTH		WATER DEPTH		HEIGHT OF DOCK	AGE	LEND															NO.	TYPE	% CAP RATED	LIFT CAPACITY												
		ACTUAL	AVAILABLE	10-20-30	40-50				FAC/WALL		STEAM		AIR		ELECTRIC		OXYGEN		ACETYLENE		ARGON					CO ₂		MAIN				WHIP						
		GPM	PSI	W/H	PSI				CFM	PSI	VOLTS	AMP	SIZE	PSI	SIZE	PSI	SIZE	PSI	SIZE	PSI	SIZE	PSI				TONS	FT	TONS	FT	TONS	FT	TONS	FT	TONS	FT			
1	WHARF	600	620	-20	-20	112	30	G	900	130	(1)	125	1000	100	180	900	1 1/2"	150	2"	20	3/4"	85	3/4"	85	2,3,4	GALLERY	100	60	35	17	95	15	96	9	115			
																								5		100	45	45	10	120	-	-	9	130				
																								6		100	50	40	12	110	-	-	10	130				
																								7,8,9		100	54.4	40	12	130	21	100	6	165				
																								10,11		100	95	35	21.8	160	25	55	19.9	160				
																								12		100	175	45	47.5	140	-	-	37.5	155				
2	WHARF / PIER	775	710	-30	-30	112	30	G	900	130	(1)	125	2000	100	180	2105	1 1/2"	150	2"	10	3/4"	85	3/4"	85	2,3,4		70	60	35	17	95	15	96	9	115			
																								5		100	45	45	10	120	-	-	9	130				
																								6		100	50	40	12	110	-	-	10	130				
3	PIER	540	560	-30	-30	112	10	G	1000	130	(1)		1200	100	180	1300	1 1/2"	150	2"	20	3/4"	115	3/4"	85	7,8,9		55	54.4	40	12	130	21	100	6	165			
4			540	560	-30	-30	112	10	G	1000	130	(1)		1200	100	180	1300	1 1/2"	150	2"	20	3/4"	85	3/4"	85	2,3,4		100	60	35	17	95	15	96	9	115		
																								5		100	45	45	10	120	-	-	9	130				
																								6		100	50	40	12	110	-	-	10	130				
5	PIER	910	965	-20	-25	112	8	G	900	130	(1)		3100	100	180	1800	2"	150	2"	20	3/4"	85	3/4"	85	7,8,9		90	54.4	40	12	130	21	100	6	165			
6			910	965	-20	-25	112	8	G	900	130	(1)		3000	100	180	1800	2"	150	2"	20	3/4"	115	3/4"	85	2,3,4		100	60	35	17	95	15	96	9	115		
																								5		100	45	45	10	120	-	-	9	130				
																								6		100	50	40	12	110	-	-	10	130				
																								7,8,9		100	54.4	40	12	130	21	100	6	165				
																								2,3,4		100	60	35	17	95	15	96	9	115				
																								5		100	45	45	10	120	-	-	9	130				
																								6		100	50	40	12	110	-	-	10	130				
7	WHARF	350	350	-20	-20	112	6	G	900	130	(1)		1200	100	180	1800	1 1/2"	150	1 1/2"	20	NONE	NONE	NONE	NONE	7,8,9		100	54.4	40	12	130	21	100	6	165			
																								10,11		100	95	35	21.8	160	25	55	19.9	160				
																								12		100	175	45	47.5	140	-	-	37.5	155				
8	WHARF	300	300	-20	-20	112	6	G	1500	130	(1)		600	100	180	1800	1"	150	1 1/2"	20	NONE	NONE	NONE	NONE	75	MOBILE	100	10	10	1.0	65	-	-	-	-			
																								271		100	9.5	10	.5	40	-	-	-	-				
9	PIER	615	650	-20	-22	112	1	E	1200	130	(1)		1100	100	180	1800	1 1/2"	150	1 1/2"	20	NONE	NONE	NONE	NONE	273		100	10	10	1.0	65	-	-	-	-			
10			625	775	-20	-22	112	1	E	1200	130	(1)		1000	100	180	1800	1 1/2"	150	1 1/2"	20	NONE	NONE	NONE	NONE	75		100	9.5	10	.5	40	-	-	-	-		
																								271		100	9.5	10	.5	40	-	-	-	-				
																								273		100	10	10	1.0	65	-	-	-	-				

NOTE: SHUT WATER SUPPLIED BY PORTABLE UNITS 1000 GPM @ 100 PSI.

(1) SUPPLIED BY ANY OF THE FOLLOWING (1) PORTABLE BOILERS (A) 50HP-1725 W/H @ 100 PSI, (B) 200HP-6900 W/H @ 130 PSI, (C) 50HP-1725 W/H @ 125 PSI, (D) 30HP-1035 W/H @ 100 PSI.

(2) MOBILE CRANES SUPPLEMENT THE WHARF FLEET.

BY: J R RUCKER
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PRODUCTION AREAS - BLUE SKY

AUG. 1980

REF. NO.	TYPE	MOD.	LOCATION	DESCRIPTION	SQ. FT.
G-1	X		STEEL YARD	WHEELABRATOR	22,577
G-2	X		CRANE WAY 2009	ROLL FORM	6,400
G-3	X		BLUE 1	GALVANIZING	1,000
G-4	X		EAST END OF YARD	PAINT	32,500
G-5	X		EAST END OF YARD	GRIT BLAST	99,800
G-6	X		25TH ST PIER	PAINT	13,437
				SECONDARY TOTAL	156,194
S-1	X		CRANE WAY 2009	PLATEN 1	43,450
S-2	X		HAMMERHEAD CRANE	PLATEN 2	23,672
S-3	X		HAMMERHEAD CRANE	PLATEN 3	6,077
S-4	X		PILLAR JIB	PLATEN 4	9,918
S-5	X		SOUTH OF BLDG. 12	PLATEN 5	15,222
S-6	X		NORTH OF BLDG. 61	PLATEN 6	15,222
S-7	X		EAST OF BLDG. 61	PLATEN 7	6,240
S-8	X		EAST OF BLDG. 26	PLATEN 8	6,322
S-9	X		CRANE WAY 500	PLATEN 9	12,255
S-10	X		CRANE WAY 591	PLATEN 10	11,020
S-12	X		CRANE WAY 2000	CM-100	3,120
S-13	X		CRANE WAY 2000	CM-150	2,730
S-14	X		CRANE WAY 2000	CM-160	3,080
S-15	X		CRANE WAY 2000	PANEL LINE	18,750
S-16	X		CRANE WAY 591	FRAME BENDER	5,890
S-17	X		CRANE WAY 591	SHAPES LAYOUT	5,230
S-18	X		CRANE WAY 598	CM-56	760
S-19	X		CRANE WAY 595	CM-60 - PLINER	3,200
S-20	X		CRANE WAY 593	CM-60 - CUTTER	3,600
S-21	X		EAST OF BLDG. 60	CM-60 - STRIPPER	2,250
S-22	X		CRANE WAY 501	TEE WELDER	6,875
S-23	X		CRANE WAY 501	BEAM BURNING	4,000

REF. NO.	TYPE	MOD.	LOCATION	DESCRIPTION	SQ. FT.
S-24	X		CRANE WAY 2000	CM-70	6,000
S-25	X		CRANE WAY 2010/2011	FURNACE / BRAKE AREA	8,800
S-26	X		CRANE WAY 511/574	SMALL ASSEMBLIES	9,750
S-27	X		CRANE WAY 510/1018	LARGE ASSEMBLIES	31,700
S-28	X		BLDG. 4	PIPE SHOP WORK AREA	8,750
S-29	X		BLDG. 3	FOUNDRY WORK AREA	8,750
S-30	X		PLATEN 6	PLATEN WORK AREA	5,000
S-31	X		NORTH OF BLDG. 42	PIPE ANNEX 1	13,050
S-32	X		N/E OF BLDG. DOCK 1	MACH. PRE-ERECTION	24,750
S-33	X		BLDG. 7	METAL SHOP WORK AREA	3,500
S-34	X		BLDG. 46	FIBERGLASS WORK AREA	1,500
S-35	X		BLDG. 73	BOILER ERECTION	23,453
S-36	X		N/E OF WAYS 2	PRE-ERECTION	14,400
S-37	X		N/E OF WAYS 3	PRE-ERECTION	27,113
S-38	X		N/E OF WAYS 4	PRE-ERECTION	12,150
				PRIMARY TOTAL	410,719

BY: J.R. RUECKER
1.4 I.C. DEPT.

STORAGE AREAS - BLUE SKY

REF. NO.	LOCATION	USAGE	OTHER USES	SO. FT.
1	STEEL YARD	RAW PLATES	X	182125
2	STEEL YARD	RAW SHAPES		15937
3	STEEL YARD	PLATE & SHAPES ALUMINUM		19062
4	STEEL YARD	PLATE & SHAPES REMINANTS		8999
5	STEEL YARD	RECLAMATION		11030
6	BLDG. 11	INPROCESS STORAGE		11325
7	BLDG. 11	WAREHOUSE		1756
8	BLDG. 19	INPROCESS STORAGE		8450
9	MARINE RAILWAY	INPROCESS STORAGE		11030
10	CRANE WAYS 2000	INPROCESS STORAGE		23810
11	CRANE WAYS 501	INPROCESS ASSEMBLIES		16125
12	CRANE WAYS 501	PLATE STORAGE		12000
13	CRANE WAYS 501	SHAPES STORAGE		6750
14	CRANE WAYS 501	INPROCESS SHAPES		1250
15	CRANE WAYS 501	INPROCESS ASSEMBLIES		1250
16	CRANE 14	INPROCESS RAW STOCK		4000
17	CRANE 10	INPROCESS ASSEMBLIES		61563
18	CRANE 56	INPROCESS PLATES		3000
19	BLDG. 1	INPROCESS ASSEMBLIES		6250
20	BLDG. 2	DIE'S		5625
21	CRANE 10	INPROCESS PLATES		10607
22	ROLLS	INPROCESS PLATES		10750
23	BLDG. 4	INPROCESS PIPES		11500
24	BLDG. 9	INPROCESS PIPES		8125
25	BLDG. 8	INPROCESS - MACH. SHOP		29250
26	BLDG. 13	BOILER STORAGE		4082
27	BLDG. 6	INPROCESS - ELECT.		22500
28	BLDG. 26	INPROCESS - ELECT.		5750
29	PLATE 1-B	INPROCESS STORAGE		14737
30	PLATE 1-2-3	INPROCESS STORAGE		2900
31	FRONT OF WAYS 4	INPROCESS		800
32				
33				
34	SIDES OF WAYS 1	INPROCESS	X	19125
35	SIDES OF WAYS 3	INPROCESS		17041
36	SIDES OF WAYS 2	INPROCESS		14441
37	BEHIND WAYS 4 TRACK	INPROCESS	X	59962

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REF. NO.	LOCATION	USAGE	OTHER USES	SO. FT.
38	PIPE ANNEX 1	INPROCESS STORAGE	X	26425
39	BLDG. 11	PAINT STORAGE		1550
40	20TH ST. TIER	INPROCESS STORAGE		1937
41	20TH ST. TIER	RIGGING STORAGE		19500
42	BLDG. 7	INPROCESS - STREET MEINL.		31525
43	BLDG. 13	INPROCESS STORAGE		6250
44	BLDG. 13	CARPENTER SHOP STORAGE		3000
45	BLDG. 64	MACH. BULL. 121 STORAGE		9700
46	BERTH I	INPROCESS STORAGE	X	8912
47	BERTH II	INPROCESS STORAGE		9000
48	BERTH III	INPROCESS STORAGE		22100
49	BERTH IV	INPROCESS STORAGE		41125
50	BLDG. 12	MAINT. STORAGE	X	15000
51	PIPE ANNEX - B	WAREHOUSE - PIPE		20172
52	BLDG. 61	INPROCESS STORAGE		6000
53	BLDG. 53	INPROCESS STORAGE		17000
54	BLDG. 73	WAREHOUSE		12500
55	BLDG. 74	WAREHOUSE		11916
56	BLDG. 45	RECEIVING		14075
57	BLDG. 45	WAREHOUSE		20592
58	BLDG. 45	INPROCESS STORAGE		12375
59	PLANNING	INPROCESS STORAGE		8250
60	GANNETT TRACKS	INPROCESS STORAGE	X	111250
61	TIME LAMPS	WAREHOUSE	X	261070
62	OPEN AREA BLDG. 44	INPROCESS STORAGE		64033
63	OPEN AREA BLDG. 12	INPROCESS STORAGE		65340
64	OPEN AREA BLDG. 10	INPROCESS STORAGE		37026
		SUB-TOTAL		1635159
		REDUCED BY		
		OFF. TRAILERS		51892
		PORTABLE BLDG.		21331
		TOTAL		1561636

BY J.R. RUECKEL
F.I.E. DEPT.

TRANSPORTATION

AUG. 1980

REF. NO.	DESCRIPTION	SQ. FT.
T-1	COLLOCATOR TRACKS	21,600
T-2	ROADWAYS	541,500
T-3	ROTATIONAL PIT	7,500
	TOTAL	570,600

BY: J.R. RUECKER
F / E.E. DEPT.

SERVICE AND SUPPORT- BLUE SKY

REF. NO.	LOCATION	DESCRIPTION	SQ FT.
S-1	GATE - 14	FIRE DEPT.	3125
S-2	BIDG. - 10	WAYS REPAIR AREA	1625
S-3	GATE - 6	UTILITIES	2500
S-4	BIDG. 12	MAINTENANCE YARD	3375
S-5	BIDG. 42	COL. & ARGON TANKS	7500
S-6	28 ST. PIER	COMPRESSOR	3000
S-7	BIDG. 13	CARPENTER SHIP REPAIR	2600
S-8	BIDG. 14	MACHINIST BULL PEN	8750
S-9	28 ST. PIER	BOILER	1600
		TOTAL	34,075

PARKING

AUG. - 1980

REF. NO.	TYPE	LOCATION / DESCRIPTION	NO. SPACES	SQ. FT.
P-1	X	ADMIN. ANNEX	OPEN	5000
P-2	X	TRANSP. DEPT	OPEN	12,600
P-3	X	EXECUTIVE LOT - BLDG 1	39	14,800
P-4	X	EXECUTIVE & VENDOR LOT - GATE 6	41	16,125
P-5	X	LOT #1	246	64,452
P-6	X	LOT #2	95	36,000
P-7	X	LOT #3	6	1,170
P-8	X	LOT #4	51	14,000
P-9	X	LOT #5	272	82,520
P-10	X	LOT #6	828	127,600
P-11	X	LOT #7	124	35,000
P-12	X	MAIN LOT	265	93,375
P-13	X	BELT ST.	41	14,244
P-14	X	GATE 2	23	3,260
			TOTAL	520,746

BY: J.R. ROELKER

CRANES - GAITRY

AUG. 1980

CRANE NO.	TYPE	POWER SOURCE	AGE	COND	CAPACITY										SERVICE AREA
					MAIN				WHIP						
					TONS	FT.	10	TONS	FT.	TONS	FT.	10	TONS	FT.	
2	CLYDE	DIESEL	10	G	60	35	17	95	15	96	9	115	ANY AREA WITHIN REACH OF RAIL NETWORK EXCEPT 10% CAP. BEATH II,		
3	CLYDE	DIESEL	10	G	60	35	17	95	15	96	9	115	ANY AREA WITHIN REACH OF RAIL NETWORK EXCEPT 10% CAP. BEATH II,		
4	CLYDE	DIESEL	10	G	60	35	17	95	15	96	9	115	ANY AREA WITHIN REACH OF RAIL NETWORK EXCEPT 10% CAP. BEATH II,		
5	CLYDE	DIESEL	10	G	45	15	10	120	-	-	9	130	ANY AREA WITHIN REACH OF RAIL NETWORK.		
6	WASHINGTON	DIESEL	38	G	50	40	12	110	-	-	10	130	ANY AREA WITHIN REACH OF RAIL NETWORK.		
7	CLYDE	DIESEL	15	G	54.4	40	12	130	21	100	6	165	ANY AREA WITHIN REACH OF RAIL NETWORK EXCEPT 35% CAP. ON BEATH II, 30% CAP. ON BEATHS III & IV.		
8	CLYDE	DIESEL	15	G	54.5	40	12	130	21	100	6	165	ANY AREA WITHIN REACH OF RAIL NETWORK EXCEPT 35% CAP. ON BEATH II, 30% CAP. ON BEATHS III & IV.		
9	CLYDE	DIESEL	15	G	54.5	40	12	130	21	100	6	165	ANY AREA WITHIN REACH OF RAIL NETWORK EXCEPT 35% CAP. ON BEATH II, 30% CAP. ON BEATHS III & IV.		
10	CLYDE	DIESEL	7	G	95	35	21.8	160	25	55	19.9	160	ANY AREA WITHIN REACH OF RAIL NETWORK EXCEPT 35% CAP. ON BEATH II, 30% CAP. ON BEATHS III & IV.		
11	CLYDE	DIESEL	9	G	95	35	21.8	160	25	55	19.9	160	ANY AREA WITHIN REACH OF RAIL NETWORK EXCEPT 35% CAP. ON BEATH II, 30% CAP. ON BEATHS III & IV.		
12	CLYDE	DIESEL	5	G	175	45	47.5	140	-	-	37.5	155	ANY AREA WITHIN REACH OF RAIL NETWORK EXCEPT 35% CAP. ON BEATH II, 30% CAP. ON BEATHS III & IV.		

(1) DWG. NO. 111-68-688 ILLUSTRATES DETAIL OF CRANE LOAD & TRAVEL CONSTRAINTS.

CRANES - MOBILE

CRANE NO.	TYPE	POWER SOURCE	AGE	COND	CAPACITY				SERVICE AREA
					TONS	FT.	TONS	FT.	
75	GROVE "HYDRO"	DIESEL	5	G	18	10	1.0	65	NO LIMIT ON SERVICE AREA
271	HYDRAULIC "HYDRO"	DIESEL	3	F	9.5	10	0.5	48	NO LIMIT ON SERVICE AREA
273	GROVE "HYDRO"	DIESEL	5	G	18	10	1.0	65	NO LIMIT ON SERVICE AREA
284	P & H "HYDRO"	DIESEL	6	F	35	12	7.5	70	AFDL-37 (ON BIRIDGE)
607	UNIT "TRUCK"	DIESEL			10	15	0.15	60	TIDELAND STORAGE - NATIONAL CITY
628	UNIT "TRUCK"	DIESEL	28	F	10	15	0.15	60	STEEL YARD

BY: J.R. BURGER
F.4 E.C. DEPT.

CRANES - OTHERS \geq 3 TONS CAPACITY

AUG. 1980

CRIME NO.	TYPE	POWER SOURCE	CAPACITY		MAGNETIC	SERVICE AREA
			TONS	SPAN/RADIUS (FT)		
1	HAMMERHEAD	440V	4	78		PLATENS 2 & 3
1A	PILLAR MB	440V	5	100		PLATEN 4
500	SEMI-GANTRY	480V	25	65		PLATEN 9
501	BRIDGE	480V	5	56.2		PREFABRICATION - TEE WELDER & BLDG. 2
502	BRIDGE	480V	5	56.2		PREFABRICATION - BLDG. 2 - PLATE SHEAR, ANGLE SHEAR, C-PRESS, BULLDOZER, PLATE ROLLS
507	CANTILEVER GANTRY	480V	15	210	*	STEEL PLATE STORAGE
511	SEMI-GANTRY	480V	3	30		PREFABRICATION
560	BRIDGE	480V	5	56.2		PREFABRICATION & BLDG. 2
574	SEMI-GANTRY	480V	5	30		PREFABRICATION
591	BRIDGE	240V-DC	10	80	*	PREFABRICATION & PLATEN 10
591A	BRIDGE	480V	10	80		PREFABRICATION & PLATEN 10
595	SEMI-GANTRY	480V	5	39		CM-60 FLAME PLANNER, CM-60 CUTTING MACHINE
598	BRIDGE	480V	3	21.5		CM-56 SHAPE CUTTER
1048	BRIDGE	480V	5	56.2		PREFABRICATION & BLDG. 2
2000	BRIDGE	480V	10	80	*	CM-100 FLAME PLANNER, CM-150 SHAPE CUTTER, CM-160 SHAPE CUTTER, & PANEL LINE
2001	BRIDGE	440V	5	40		MACHINE SHOP BLDG. 8
2002	BRIDGE	440V	5	40		MACHINE SHOP BLDG. 8
2003	BRIDGE	480V	5	56		MACHINE SHOP BLDG. 8
2004	BRIDGE	480V	5	56		MACHINE SHOP BLDG. 8
2005	BRIDGE	480V	5	42.5		MACHINE SHOP BLDG. 9
2006	BRIDGE	480V	20	42.5		MACHINE SHOP BLDG. 8
2007	BRIDGE	480V	20	42.5		MACHINE SHOP BLDG. 8
2008	SEMI-GANTRY	480V	10	88.5	*	PLATEN 1 & CM-70 SHAPE CUTTER
2009	SEMI-GANTRY	480V	10	88.5	*	PLATEN 1 & PLATE ROLLS
2010	SEMI-GANTRY	480V	10	40.8		BLACKSMITH SHOP - PRESS BRAKE, & PLATE ROLLS
2011	SEMI-GANTRY	480V	10	40.8		BLACKSMITH SHOP - PLATE ROLLS, & FURNACE
2013	BRIDGE	480V	3	35.1		PIPE SHOP BLDG. 4
2014	BRIDGE	480V	3	35.1		PIPE SHOP BLDG. 4
2017	BRIDGE	480V	5	35.2		FOUNDRY BLDG. 9
2018	BRIDGE	480V	10	35.2		FOUNDRY BLDG. 9
2019	BRIDGE	230V	3	21.5		PIPE SHOP BLDG. 4
3701	PORTAL	DIESEL	13.5	42		AFDL-37 DRYDOCK
3702	PORTAL	DIESEL	19.2	50		AFDL-37 DRYDOCK
593	SEMI-GANTRY	480V	2	39	*	CM-60 FLAME PLANNER, CM-60 CUTTING MACHINE

BY: J.R. RUECKER
F. & I.E. DEPT.

CRANES - JIB

AUG. 1980

HOIST	QTY	CAPACITY (TONS)	SWING (DEGREES)	BOOM		POWER SOURCE	MONORAIL TRAVEL	LOCATION
				L (FT)	H (FT)			
BUDGET	1	1	180	10	10	ELEC.	-	BLDG. 11
BUDGET	1	1	-	-	10	ELEC.	35 FT.	BLDG. 11
YALE	1	1	180	15	10	ELEC.	-	BLDG. 8 (OUTSIDE)
YALE	1	1/2	180	15	12	ELEC.	-	BLDG. 8
YALE	3	1/2	180	15	20	ELEC.	-	BLDG. 8
YALE	1	1/2	-	-	12	CHAIN HOIST	20 FT.	BLDG. 8
N/A	1	N/A	-	-	25	N/A	25 FT.	BLDG. 8
BUDGET	1	1/2	180	15	10	ELEC.	-	BLDG. 8
N/A	1	N/A	180	10	10	N/A	-	BLDG. 8
BUDGET	1	1/2	180	20	10	ELEC.	-	BLDG. 8
YALE	1	1	-	-	10	ELEC.	40 FT.	BLDG. 8
IN REPAIRS	1	1	-	-	10	CHAIN HOIST	40 FT.	BLDG. 8
YALE	1	1/2	-	-	10	ELEC.	40 FT.	BLDG. 8
YALE	8	1/2	-	-	39	CHAIN HOIST	113 FT.	BOILER ERECTION
YALE	1	1	-	-	25	ELEC.	8 FT.	BLDG. 7
YALE	1	1/2	180	15	10	ELEC.	-	BLDG. 7
HARRIS/FEGER	2	1	-	-	12	ELEC.	190 FT.	BLDG. 7
N/A	1	N/A	-	-	12	N/A	20 FT.	BLDG. 7
YALE	1	1	-	-	7	CHAIN HOIST	30 FT.	BLDG. 7
BUDGET	1	1	-	-	15	ELEC.	30 FT.	BLDG. 7
HARRIS/FEGER	2	5	-	-	14	ELEC.	27 FT.	LEADSHOP
WRIGHT	1	2	360	10	12	ELEC.	-	LEADSHOP
YALE	1	3	-	-	8	CHAIN HOIST	10 FT.	LEADSHOP
YALE	1	2	-	-	8	CHAIN HOIST	10 FT.	LEADSHOP
YALE	1	1	360	10	10	ELEC.	-	BUILDING DOCK 1
BUDGET	1	1	180	15	10	AIR	-	BLDG. 12
BUDGET	1	2	180	15	15	AIR	-	BLDG. 12
BUDGET	1	1	180	8	10	ELEC.	-	BLDG. 12
BUDGET	1	1	180	10	10	ELEC.	-	BLDG. 9
N/A	1	N/A	180	8	8	N/A	-	BLDG. 9
BUDGET	1	1	180	6	8	ELEC.	-	BLDG. 9
WESTLEY	1	2	-	-	N/A	RACK & PINION	30 FT.	BLDG. 9
FEENLESS	1	2	-	-	N/A	CHAIN HOIST	50 FT.	BLDG. 9
YALE	1	2	-	-	N/A	CHAIN HOIST	50 FT.	BLDG. 9
IN REPAIRS	2	2	-	-	N/A	AIR	110 FT.	GALVANIZING SHOP
IN REPAIRS	1	2	-	-	N/A	AIR	100 FT.	GALVANIZING SHOP

HOIST	QTY	CAPACITY (TONS)	SWING (DEGREES)	BOOM		POWER SOURCE	MONORAIL TRAVEL	LOCATION
				L (FT)	H (FT)			
YALE	1	2	180	12	10	ELEC.	-	BLDG. 4
YALE	1	1	180	15	10	ELEC.	-	BLDG. 4
YALE	1	1/2	180	15	10	ELEC.	-	BLDG. 4
BUDGET	1	1	180	20	10	ELEC.	-	BLDG. 4
YALE	2	1	180	15	10	ELEC.	-	BLDG. 4
YALE	1	1/2	180	15	12	ELEC.	-	BLDG. 4
BUDGET	1	1	180	15	10	ELEC.	-	BLDG. 4
BUDGET	2	2	180	20	10	ELEC.	-	BLDG. 4
YALE	1	1/2	180	12	10	ELEC.	-	BLDG. 4
YALE	1	1/2	180	20	10	ELEC.	-	BLDG. 4
BUDGET	1	2	180	15	10	ELEC.	-	BLDG. 4
BUDGET	3	2	180	12	10	ELEC.	-	BLDG. 4
BUDGET	1	1	180	15	10	ELEC.	-	BLDG. 4
YALE	1	1/2	180	15	10	ELEC.	-	BLDG. 4
BUDGET	1	1	-	-	10	ELEC.	160 FT.	BLDG. 4
YALE	1	1	180	12	10	CHAIN HOIST	-	BLDG. 4
N/A	1	N/A	180	20	15	N/A	-	TET VIGILANT AREA
IN REPAIRS	1	2	180	20	15	AIR	-	BLDG. 2 - R SHEAR
BUDGET	1	1	-	-	10	ELEC.	15 FT.	BLDG. 2 - R SHEAR
WRIGHT	1	2	-	-	10	CHAIN HOIST	30 FT.	BLDG. 2
N/A	1	N/A	-	-	10	N/A	30 FT.	BLDG. 2
IN REPAIRS	3	2	180	25	15	AIR	-	BLDG. 2 - BUILDING, C-FRAME
IN REPAIRS	2	2	180	22	12	AIR	-	BLDG. 2
YALE	1	2	180	22	12	ELEC.	-	BLDG. 2
YALE	2	2	180	22	15	AIR	-	BLDG. 2
IN REPAIRS	3	2	180	22	15	AIR	-	BLDG. 2
N/A	2	N/A	180	22	15	N/A	-	BLDG. 2
IN REPAIRS	1	2	180	20	15	AIR	-	BLDG. 2
IN REPAIRS	1	2	180	20	15	AIR	-	BLDG. 2
BUDGET	1	2	180	15	10	AIR	-	BLDG. 2 - ANGLE SHEAR
BUDGET	2	1	-	-	15	ELEC.	110 FT.	BLDG. 2

BY: J.R. RUECKER
F&E. DEPT.

LIFT TRUCKS

NAISSCO NO.	MAKE	MODEL	DESCRIPTION					LICENSED		ASSIGNED TO	AGE	COND
			PROP.	XMSN	TIRES	CAP. LBS.	WGT. LBS.	YES	NO			
03-680	CLARK	C400	GAS	AUTO	CUSH.	6	123		X	MACHINE SHOP	4	F
03-795	CLARK	C300-YMD	DIESEL	AUTO	CUSH.	4	127		X	MACHINE SHOP	3	G
14-84	CLARK	C40B	GAS	AUTO	CUSH.	4	-		X	BOILER SHOP	18	P
19-14	CLARK	CHY200D	DIESEL	OIL CL.	PNEU	20	2-SPD 210	X		TRANSPORTATION	10	P
19-15	CLARK	CHY200D	DIESEL	OIL CL.	PNEU	20	2-SPD 210	X			10	P
19-20	IRWIN	S270	GAS	AUTO	PNEU	4	MULTI-PALLETS		X		5	F
19-10	ROSS	786B	GAS	MAN.	PNEU	30	CARRIER		X		3	G
19-160	A-C	S270	DIESEL	AUTO	PNEU	26	2-SPD 210		X		4	F
19-231	CLARK	CHY300	DIESEL	OIL CL.	PNEU	30	2-SPD 210	X			4	G
19-232	CLARK	SC400B	DIESEL	AUTO	PNEU	40	2-SPD 210	X			1	G
19-261	CLARK	CS00Y515D	DIESEL	AUTO	PNEU	20	144		X		1	G
19-261	CLARK	CS00Y515D	DIESEL	AUTO	PNEU	20	144		X		1	G
19-262	CLARK	CS00Y515D	DIESEL	AUTO	PNEU	8	147		X		1	G
19-263	CLARK	CS00Y515D	DIESEL	AUTO	PNEU	8	123		X		1	G
19-264	CLARK	CS00Y515D	DIESEL	AUTO	PNEU	8	123		X		1	G
19-265	CLARK	CS00Y515D	DIESEL	AUTO	PNEU	8	123		X		2	G
19-266	CLARK	CS00Y515D	DIESEL	AUTO	PNEU	22.5	144		X		2	G
19-267	CLARK	CS00Y515D	DIESEL	AUTO	PNEU	8	147		X		5	F
19-269	CLARK	CS00Y515D	DIESEL	AUTO	PNEU	6	123		X		5	F
19-270	CLARK	CS00Y515D	DIESEL	AUTO	PNEU	8	147		X	CARPENTER SHOP	5	F
19-272	CLARK	CS00Y515D	DIESEL	AUTO	PNEU	20	2-SPD 210	X		TRANSPORTATION	5	F
19-280	CLARK	CS00Y515D	DIESEL	AUTO	PNEU	30	2-SPD 210	X			4	G
19-281	CLARK	CS00Y515D	DIESEL	AUTO	PNEU	13	173	X			4	G
19-282	CLARK	CS00Y515D	DIESEL	AUTO	PNEU	13	173	X			4	G
19-285	CLARK	CS00Y515D	DIESEL	AUTO	PNEU	6	157		X		2	G
19-300	CLARK	BO 6B	GAS	MAN.	PNEU	40	157	X			6	F
19-308	CLARK	CS00Y515D	DIESEL	AUTO	PNEU	6	151		X		4	F
19-309	CLARK	CS00Y515D	DIESEL	AUTO	PNEU	6	151	X			4	F
19-450	CLARK	CS00Y515D	DIESEL	AUTO	PNEU	40	157	X			9	F
19-677	CLARK	CS00Y515D	DIESEL	AUTO	PNEU	15	173	X			4	G
19-681	CLARK	CS00Y515D	DIESEL	AUTO	PNEU	6	148	X			4	G
19-682	CLARK	CS00Y515D	DIESEL	AUTO	PNEU	6	130	X			4	G
19-683	CLARK	CS00Y515D	DIESEL	AUTO	PNEU	6	147	X			4	G
19-684	CLARK	CS00Y515D	DIESEL	AUTO	PNEU	8	147	X			4	G
19-685	CLARK	CS00Y515D	DIESEL	AUTO	PNEU	8	147	X			4	G
19-686	CLARK	CS00Y515D	DIESEL	AUTO	PNEU	8	147	X			4	G
19-688	CLARK	CS00Y515D	DIESEL	AUTO	PNEU	8	147	X			4	G

AUG 1980

NAISSCO NO.	MAKE	MODEL	DESCRIPTION					LICENSED		ASSIGNED TO	AGE	COND
			PROP.	XMSN	TIRES	CAP. LBS.	WGT. LBS.	YES	NO			
19-692	CLARK	CS00Y515D	DIESEL	AUTO	GRAB.	15	170	X		TRANSPORTATION	3	G
19-696	CLARK	CS00Y515D	DIESEL	AUTO	GRAB.	15	170		X		3	G
19-792	CLARK	CS00Y515D	DIESEL	AUTO	GRAB.	8	147		X		3	G
19-793	CLARK	CS00Y515D	DIESEL	AUTO	GRAB.	8	147		X		3	G
19-794	CLARK	CS00Y515D	DIESEL	AUTO	GRAB.	6	123		X		3	G
19-796	CLARK	CS00Y515D	DIESEL	AUTO	GRAB.	6	123		X		3	G
19-797	CLARK	CS00Y515D	DIESEL	AUTO	GRAB.	8	154	X		PLATE SHOP	3	G
19-798	CLARK	CS00Y515D	DIESEL	AUTO	GRAB.	8	148		X	PIPE SHOP	3	G
19-799	CLARK	CS00Y515D	DIESEL	AUTO	GRAB.	8	147		X	TRANSPORTATION	3	G
19-825	CLARK	CS00Y515D	DIESEL	AUTO	GRAB.	8	154		X		3	G
19-826	CLARK	CS00Y515D	DIESEL	AUTO	GRAB.	6	123		X		3	G
19-827	CLARK	CS00Y515D	DIESEL	AUTO	GRAB.	6	123		X		3	G
19-828	CAT	V80C	GAS	AUTO	GRAB.	8	146		X		2	G
19-830	CLARK	CS00Y515D	DIESEL	AUTO	GRAB.	5	-		X	CARPENTER SHOP	13	P
19-191	CLARK	CS00Y515D	DIESEL	AUTO	GRAB.	4	140		X	SHEET METAL SHOP	3	G
53-152	CLARK	740B	LPG	AUTO	CUSH.	4	156		X	WAREHOUSE	6	F
53-206	CAT	V60C	GAS	AUTO	GRAB.	6	150		X		4	G
55-69	CLARK	V60B	LPG	AUTO	PNEU	6	118		X	WAREHOUSE - PA	21	P
55-129	CLARK	V60B	LPG	AUTO	PNEU	6	156		X	WAREHOUSE	6	F
55-212	CLARK	HP300-30	ELECT.	SCR	SOLID	3	170		X		1	G
55-213	CLARK	HP300-30	ELECT.	SCR	SOLID	3	170		X		1	G
55-214	CLARK	HP300-30	ELECT.	SCR	SOLID	3	170		X		7	F
55-215	CLARK	HP300-30	ELECT.	SCR	SOLID	3	170		X		7	F
55-216	CLARK	HP300-30	ELECT.	SCR	SOLID	3	170		X		2	G
55-256	CLARK	V60B	LPG	AUTO	PNEU	6	101		X		6	F
55-258	CLARK	305 PC	ELECT.	N/A	SOLID	3	146		X		6	F
55-294	CAT	T50B	LPG	AUTO	CUSH.	5	156		X		2	G
55-301	CAT	V60C	GAS	AUTO	GRAB.	6	154		X		2	G
55-307	CLARK	HP300-30	ELECT.	N/A	SOLID	4.5	154		X		5	F
62-687	CLARK	CS00Y515D	DIESEL	AUTO	GRAB.	4.5	154		X	MAINTENANCE	4	G
R-135	CLARK	CS00Y515D	DIESEL	AUTO	GRAB.	6	154		X	AD LEAD SHOP	4	G
10216	CLARK	LY40B	GAS	AUTO	PNEU	4	-		X	WAREHOUSE	14	P
10629	CLARK	V60B	LPG	AUTO	PNEU	6	156		X		6	G
10676	CLARK	C60	GAS	AUTO	CUSH.	6	154		X	FOUNDRY	7	F
10867	CLARK	NSP 205G	ELECT.	N/A	SOLID	3	152		X	WAREHOUSE	11	P

BY J.R. RUECKER
F.I.E. DEPT.

EQUIPMENT - PLATE SHOP BLDG. 2

REF. NO.	NASSCO NO.	DESCRIPTION	AGE	CAT.	MFG.	MODEL	CAPACITY																					
1	1109	GRINDER	10	G	N/A	PEDESTAL	2- WHEELS USED FOR TOOLS																					
2	1710	GRINDER	10	G	MARSHIRE	PEDESTAL	2- WHEELS USED FOR PRODUCTION																					
3	529	PLATE ROLL	8	G	BERTSCH	10080	CAP. 1" X 10' PLATE																					
4	594	PRESS BRAKE	12	F	CLEVELAND	AK-16-20	1000 TON MAX. OUTSIDE DIE 24'-0" MAX. INSIDE DIE 20'-3" CENTER OF DIE TO ARCH 25" 90° BEND <table><tr><th>THK</th><th>DIE OPENING</th><th>LENGTH</th></tr><tr><td>5/8"</td><td>5"</td><td>20'-0</td></tr><tr><td>3/4"</td><td>7"</td><td>18'-0</td></tr><tr><td>7/8"</td><td>8</td><td>16'-0</td></tr><tr><td>1"</td><td>10"</td><td>14'-0</td></tr><tr><td>1 1/8"</td><td>11"</td><td>12'-0</td></tr><tr><td>1 1/4"</td><td>12"</td><td>10'-0</td></tr></table>	THK	DIE OPENING	LENGTH	5/8"	5"	20'-0	3/4"	7"	18'-0	7/8"	8	16'-0	1"	10"	14'-0	1 1/8"	11"	12'-0	1 1/4"	12"	10'-0
THK	DIE OPENING	LENGTH																										
5/8"	5"	20'-0																										
3/4"	7"	18'-0																										
7/8"	8	16'-0																										
1"	10"	14'-0																										
1 1/8"	11"	12'-0																										
1 1/4"	12"	10'-0																										
5	513	PLATE ROLL	10	P	NILES	N/A	1/2" X 30' TOP ROLL OD 12"																					
6	577	LARGE FURNACE	20	P	NASSCO	N/A	DIM. 12'-0 WIDE, 30'-0 LONG 5'-6" HIGH AT ENDS UP TO 2200° F																					
7	580	SMALL FURNACE		F	NASSCO	N/A	DIM. 42" WIDE, 21'-0 LONG 30" HIGH.																					
8	563	PANBSAW	12	G	E.B.Y.	N/A	TABLE 38'X56' 35' ARM REACH, 13" HEIGHT CLEARANCE																					
9	N/A	PORTABLE FURNACE	12	G	NASSCO	N/A	2' X 2' X 6'																					
10	533	THREADER	10	F	LANDIS	N/A	TITE LEAD SCREW, CAP 2" DIA.																					
11	511	DRILL PRESS	12	F	WALKER-TURNER	N/A	ARM REACH 71", SPINDLE TO BASE 12", PRODUCTION TABLE 16'X16" SPINDLE MINOR TAPER																					

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REF. NO.	NASSCO NO.	DESCRIPTION	AGE	CAT.	MFG.	MODEL	CAPACITY
12	N/A	TABLE SAW	1	E	ROCKWELL	34-611	MAX. DEPTH OF CUT 3 3/8" MAX. RIP TO RIGHT OF BLADE 50" MAX. RIP TO LEFT OF BLADE 15 1/2" MAX. THICK OF CUT @ 45° 2 3/8" DIST. FRONT OF TABLE TO CENTER OF BLADE 16 1/2" TABLE 2nd FRONT OF SAW BLADE AT MAX. CUT 11 1/4" MAX. WIDTH OF DADO 1 1/2"
13	N/A	ROTATORY BURNING TABLE		G	N/A	N/A	12" DIA TABLE AIR POWERED
14	1712	GRINDER	10	G	N/A	PEDESTAL	2-WHEELS USED FOR TOOLS
15	1045	RADIAL DRILL	6	F	SUMMIT	M10-L4	36" SIZE
16	1628	THREADER		G	OSTER	792-A	1/4" TO 2" DIA
17	503	DROP HAMMER		G	BERNARD MILES	N/A	CAP. 12", 18 THROAT 600"
18	N/A	SMALL FURNACE	10	G	NASSCO	N/A	4" X 10" X 10"
19	1711	GRINDER	10	G	N/A	PEDESTAL	2-WHEELS USED FOR TOOLS
20	510	HYDRAULIC PRESS		F	N/A	1161	12" STROKE, 2000 PSI 5 THRS, 85" LONG OPENING
21	525	PLATE ROLL		F	MILLES/JONES	3	CAP. 1/2" X 10' TOP ROLL 11" & BOT. 9"
22	N/A	DRILL PRESS		F	EMCE		0-1/2" JACOBS CHUCK
23	N/A	BAND SAW	13	F	SEARS	12"	ARM REACH 12", HEIGHT CLEARANCE 6", TABLE 26" X 50"
24	10110	BULL DOZER	15	G	CLEVELAND	2	200 TONS 24" I BEAM HORIZONTAL & VERTICAL 1 1/2" SIDE STROKE, 12" ADJ. STROKE 20 STROKES PER MIN.

BY: J.R. RUECKER
F.I.E. DEPT.

EQUIPMENT- PLATE SHOP BLDG. 2

REF. NO.	NASSCO NO.	DESCRIPTION	A G E	C O D E	MFG.	MODEL	CAPACITY
25	515	"C" PRESS	20	G	BEATTY	N/A	350 TDNS, 6' THROAT, 2' X 5' T SLOT BED, 3'-6" CLEARANCE, 36" STROKE
26	520	COMBO. SHEAR, PUNCH & COPER	30	F	KLING	7	SHEAR PLATE UP TO 3/4" FLAT BAR UP TO 1" X 7" SQUARE BAR UP TO 2" ROUND BAR UP TO 2 1/4" ANGLE-SQ. UP TO 6" X 6" X 1/2" ANGLE-MIXED UP TO 4" X 4" X 1/2" TEES-SQ. UP TO 4" X 4" X 1/2" PUNCH MAX. 1 1/2" HOLE THRU 1" PLATE COPER I BEAM UP TO 12" CHANNELS UP TO 12" ANGLES UP TO 4" X 4" X 1/2" PLATES UP TO 1/2"
27	518	BENCH PUNCH PRESS	50	F	CLEVELAND	EF 30	36" THROAT, 30 STROKES/MIN PUNCH 1/4" THRU 1" PLATE SHEAR 1/8" BAR SHEAR 6" X 1" ROUND BAR SHEAR 2" SQ BAR SHEAR 1 1/2" ANGLE SHEAR 4" X 4" X 1/2"
28	1046	PLATE SHEAR	30	F	STAMCO	N/A	MAX. 3/4" X 10' MILD STEEL
29	521	ANGLE SHEAR	1	G			MAX 8" X 8" X 3/4"
30	524	BAND SAW		P	MARVEL	0	TABLE 30' X 50' ARM REACH 16" HEIGHT CLEARANCE 18" FEED ROLLS TO & FROM SAW
31	N/A	ABRASIVE SAW		P	MERCURY	N/A	MAX. 2 1/2"

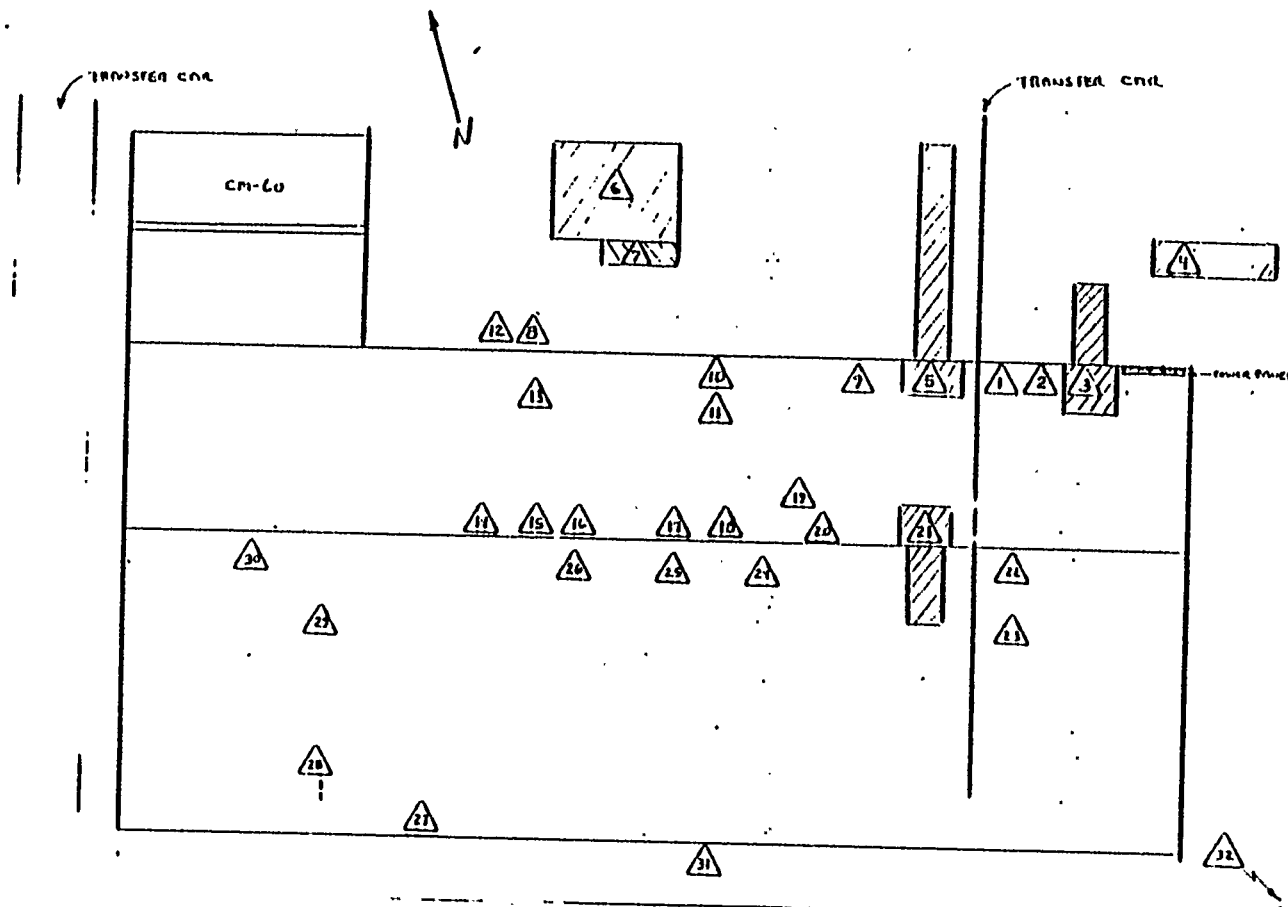
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REF. NO.	NASSCO NO.	DESCRIPTION	A G E	C O D E	MFG.	MODEL	CAPACITY
32	10372	PLATE ROLL	30	F	SMITH	A10	MILD STEEL PLATES ONLY 30' LONG OPEN-ENDING 2" R - 4' RAD 30' LONG 1 1/2" R - 5' RAD 30' LONG 1 1/4" R - 4' RAD 24' LONG

BY: J.R. RUECKER
F. & I. E. DEPT.

PLATE SHOP BLDG 2
EQUIPMENT LOCATIONS

JUNE 1979
R



EQUIPMENT - GALVANIZING BLDG. 3

AUG. 1980

REF. NO.	NASSCO NO.	DESCRIPTION	AGE	COLOR	MFG.	MODEL	CAPACITY
1	1303	GALVANIZING TANK	4	F	NASSCO	N/A	TANK SIZE 13' LONG 3' 6" WIDE 4' DEEP
2	1304	SULPHURIC ACID TANK	1	G	NASSCO	N/A	TANK SIZE 18' LONG 4' WIDE 5' DEEP
3	1305	CAUSTIC SODA TANK	20	G	NASSCO	N/A	TANK SIZE 22' LONG 3' WIDE N/A DEEP
4	1313	RINSE TANK	20	G	NASSCO	N/A	TANK SIZE 10' LONG 4' WIDE 5' DEEP
5	1314	EARTH CHLORIDE TANK	10	F	NASSCO	N/A	TANK SIZE 16' LONG 4' WIDE N/A DEEP
6	1309	SPINNER	30	G	BARRETT	N/A	150 LB CAP. 24" DIA. TOP OPENING
7	1310	SANDBLAST HUT	30	G	SLY.	N/A	SIZE 10' X 10' X 9'
8	1315	SCALE	30	F	HOWE	N/A	6 TONS

BY: J.R. RUECKER
F. & T. F. DEPT.

EQUIPMENT PIPE SHOP BLDG. 4

AUG. 1980

REF. NO.	MASSCO NO.	DESCRIPTION	HTG.	MODEL	CAPACITY	REF. NO.	MASSCO NO.	DESCRIPTION	HTG.	MODEL	CAPACITY
1	10344	GASKET CUTTER	HYDRAVIC	SR. 50	MATERIAL - UP TO 3/4" THK GASKET MIL TABLE - 36" X 36"	17	10719	BANDSAW	HYDRAVIC	NO 8	TABLE 33" X 40" FEED TABLE 18" X 9" W/ROLLERS ARM REACH - 18" FACE TO BASE - 18"
2	242	HAND PRESS	ALIAS	NO. 2	ARM REACH - 6" FACE TO BASE - 13"	18	1702	GRINDER	N/A	HYDRAVIC	2 - 10" WHEELS
3	1705	GRINDER	N/A	REACH	2 - 10" WHEELS	19	1704	DISK SANDER	MASSCO	N/A	24" DIA
4	234	DRILL PRESS	BUFFALO	NO 16	CHUCK - MORSE TAPER TABLE - 15" X 16" ARM REACH - 8" FACE TO BASE - 10"	20	NA	HYDRAULIC TRESS	NUCER	11-1	TABLE 13 X 35" OPENING - 40" H, 30" W
5	106	THRENDER	N/A	N/A	PORTABLE 1/8" TO 2" DIA.	21*	10457	PIPE BENDER	CONST	N/A	4" TO 12" DIA CU. CH-M RAD. 3 X DIA. STL RAD. 5 X DIA.
6	109	THRENDER	N/A	N/A	PORTABLE - TO BE SCRAPED 1/8" TO 2"	22	1701	GRINDER	N/A	HYDRAVIC	2 - 10" WHEELS
7	N/A	PIPE & BOLT THRENDER	OSTER	655	PORTABLE - TO REAKE "104" 1/8" TO 2" DIA.	23	10927	WELDING POSITIONER	ARMSTRONG	10250-1	2 1/2" TO 36" DIA
8	259	DRILL PRESS	C.F. BULLOTT	FLOOR	CHUCK - MORSE TAPER TABLE - 10" DIA. ARM REACH - 11" FACE TO BASE - 30"	24	N/A	WELDER	WELLINE	N/A	SEAM WELDS 3/8" TO 1/2" DIA 6' X 12' 12' DIA OB. 2" TO 10 DIA 10' 12' DIA JOINT WELDS UP TO 10" DIA
9	105	THRENDER	OSTER	716	STATIONARY 1" TO 6" DIA	25	10926	WELDING POSITIONER	ARMSTRONG	10250-1	2 1/2" TO 36" DIA
10	246	BANDSAW	JOHNSON	N/A	MTL THK. 0 TO 4"	26	10720				
11	253	PANTOGRAPH	N/A	N/A	3" TO 8" DIA. 30" & LEVEL CUTS TORCH - LINDE C-61 NAT. GAS	27	1700	GRINDER	N/A	HYDRAVIC	2 - 8" WHEELS
12*	N/A	PANTO GRAPH	VERBODT 1001	N/A	4" TO 36" DIA 90° BEV, SADDLES & HOLE CUTS TORCH - THERMAL ARC PEX-68 POWER SUPPLY - THERMAL ARC PEX-71 1/2" KNE CUTTING ATTACHMENT	28	10932	WELDING POSITIONER	ARMSTRONG	10250-1	2 1/2" TO 36" DIA.
13	245	POWER ROLL	READCO	1RA 61	6" TO 36" DIA	29	10927				
14	236	EDLER ROLL	READCO	UTP-101	6" TO 36" DIA.	30	10931				
15	237	EDLER ROLL	READCO	UTP-101	6" TO 36" DIA.	31	10945	EXPANDER	N/A	N/A	2 1/2" TO 12" DIA NEW FLARWS MIN. WILE 4 CH 40
16	10225	WELDING POSITIONER	KANSUM	N/A	2 1/2" TO 36" DIA.	32*	10944	BANDSAW	MAKVEL	NO 8	TABLE 33" X 40" FEED TABLE 18" X 9" W/ROLLERS ARM REACH - 18" FACE TO BASE - 18"
						33	10930	WELDING POSITIONER	ARMSTRONG	10250-1	2 1/2" TO 10" DIA
						34	10027	HOSE ASSEMBLER	MASSCO	N/A	3" TO 6" DIA. HOSE
						35	107	HOSE ASSEMBLER	READQUIP	B	1/8" TO 2" DIA. HOSE PORTABLE
						36	10456	HOSE CARRIER, STRIPPER	N/A	N/A	1/2" TO 2" DIA HOSE

* THIS EQUIPMENT WILL BE MOVED TO THE NEW PIPE ANEX II

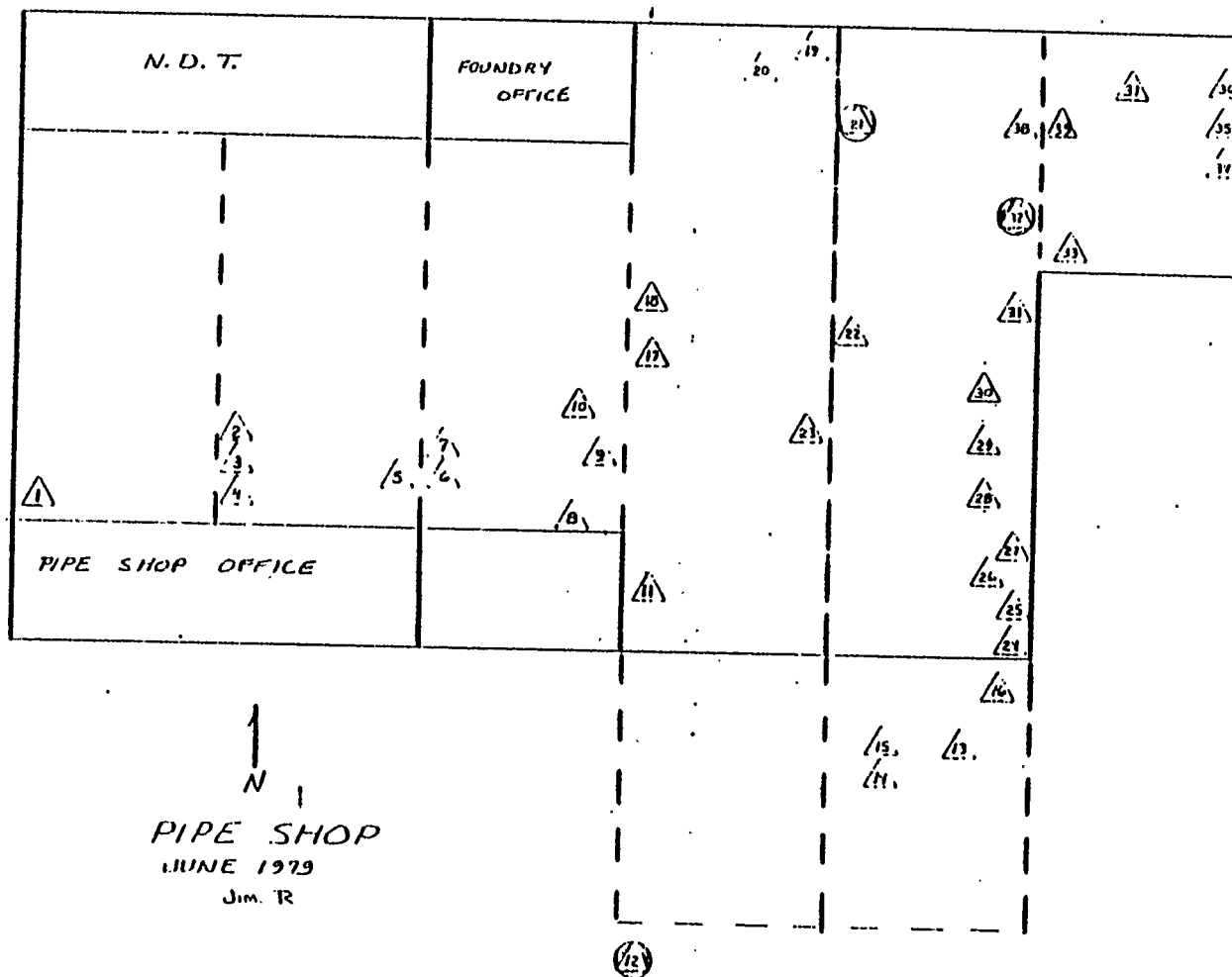
BY J.R. RUECKER
141C DPM

EQUIPMENT PIPE SHOP BLDG. 4

Aug- 1980

[illegible]

BY: J. R. RUECKER
F. T. E. DEPT.



EQUIPMENT PIPE ANNEX 1

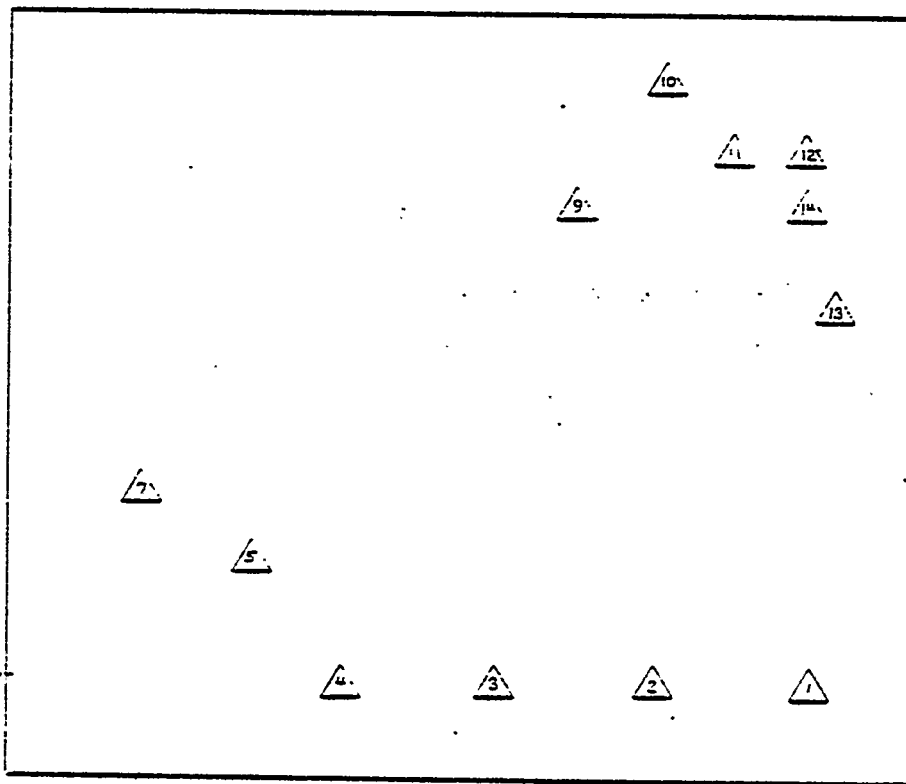
AUG 1980

REF. NO.	NASSCO NO.	DESCRIPTION	MFG.	MODEL	CAPACITY	IN. C. L.	W. H. D.
1	10325	BENDER	WILLAC	500-25	1/2" TO 2" DIA. CU. CU-NI RAD 3X DIA	11	F
2	10322	BENDER	NASSCO	N/A	1/2" TO 2" DIA. CU. CU-NI RAD. 3X DIA.	10	F
3	10323	BENDER	NASSCO	N/A	UP TO 2" DIA. STL RAD. 5X DIA.	25	F
4	10324	BENDER	NASSCO	N/A	UP TO 1 1/2" DIA. STL RAD. 5X DIA.	30	F
5	10326	BENDER	NASSCO	N/A	1/2 TO 1 1/4 DIA. STL RAD. 5 X DIA. ROLL RADIUS BENDS ON PIPE UP TO 2" WITH 11' TO 20' RAD.	30	F
6	N/A	BENDER	NASSCO	N/A	1 1/4 TO 2" DIA. STL RAD. 5X DIA.	30	F
7	241	BAND SAW	KRAMAZOO	B-C-W	UP TO 2" DIA.	25	F
8	250	COIL BENDER	OSTER	B-RAP	1 1/2" COILS STRAIGHT & TAPERED	30	F
9	1153	GRINDER	N/A	REPSAL	2 - 12" WHEELS	15	G
10	11316	THREADER	RIGID	535	1/2" TO 2" DIA.	8	F
11	10328	HAND SHEAR	BEVERLY	SS2	1 1/4" FLAT BAR		
12	10357	BAND SAW	WELLS	50B	UP TO 2" DIA. NON-FERROUS METALS	5	G
13	10358	PIPE BUTT	OSTER	"10	DEBURRS & BEVELS I.D. 1/4" TO 1" DIA.		
14	10317	EXPANDER	N/A	N/A	1/2" TO 2" DIA. NON-FERROUS METALS	10	F
15	10135	BENDER	N/A	N/A	1/2" TO 2" DIA. STL RAD. 5X DIA. PORTABLE	10	F
16	10344	PIPE BENDER	N/A	5"	2 1/2 TO 5 DIA. CU CU-NI RAD 3X DIA STL RAD 5X DIA.	15	F

BY: J.R. RUECKER
F & E, INC.

15

ROAD WAY



ROADWAY

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PIPE ANNEX II
JUNE 1979
JIM R.

EQUILIBRIUM ELECTRIC SHIP BULK; 6 & 7

REF. NO.	NASSCO NO.	DESCRIPTION	A C E	S N P	MFG.	MODEL	CAPACITY
1	2261	BAKING OVEN	16	P	NASSCO	N/A	23" X 15" X 15"
2	2264	BAKING OVEN	16	P	NASSCO	N/A	64" X 68" X 74"
3	10319	DRILL PRESS	15	F	POWERMAIL	1150-23	7 1/2" THROAT, 36" HEIGHT CLEARANCE, JACOBS CHUCK
4	10316	DRILL PRESS	16	F	WINNER	BDX-1	7 1/2" THROAT, 15" HEIGHT CLEARANCE, JACOBS CHUCK
5	1719	GRINDER	16	F	STANLEY	257	2-6 INCHES USED FOR TOOLS MAX DIA. 3 1/2"
6	N/A	POWER WACK SAW	16	P	WELLS	50 B	
7	10880	THE LETTER MACH.	12	P	N/A	T-10 A	3/4 LETTERS ALPHA & NUMERIC
8	290	TEST BOX RHEOSTAT	10	F	NASSCO	SMALL	TYPE SALT WATER TANK FOR TESTING GENERATORS
9	299	TEST BOX RHEOSTAT	15	G	NASSCO	LARGE	TYPE SALT WATER TANK FOR TESTING GENERATORS
10	N/A	TEST BOX RHEOSTAT	15	G	NASSCO	LARGE	TYPE SALT WATER TANK FOR TESTING GENERATORS
11	N/A	BRYLING- OVEN	12	F	N/A	N/A	8 1/2" X 10" L X 8" W
12	N/A	DIP TANK	1	E	NASSCO	N/A	FLOOR PIT 8'0" X 6'6" X 2'0"
13	N/A	DIP TANK	1	E	NASSCO	N/A	FLOOR PIT 8'0" X 6'6" X 2'0"
14	N/A	DIP TANK			NASSCO	N/A	3' X 3' X 2'
15	N/A	DIP TANK			NASSCO	N/A	3' X 7' X 3'
16	N/A	DRILL PRESS	16	P	POWERMAIL	1150 A	7 1/2" THROAT, 36" HEIGHT CLEARANCE, JACOBS CHUCK
17	N/A	POWER WACK SAW	16	F	WELLS	50 B	MAX. DIA. 3 1/2"

AUG. 1980

[illegible]

BY: J.R. RUECKER
F.I.E. DIVT.

EQUIPMENT - SHEET METAL SHOP BLDG. 1

REF. NO.	WSSCO NO.	DESCRIPTION	AGE	CO.	MFG.	MODEL	CAPACITY
1	1750	GRINDER	10	G	N/A	FEDERAL	2-WHEELS USED FOR PRODUCTION
2	704	IRON WORKER	15	F	BUFFALO	VL B	PUNCH - 1 1/2" x 3/4" or 1 1/2" x 1/4" SHEAR - 5/8" x 1/2" x 8 1/2" 3/4" x 3/4" x 1/2" x 1/2" FLATS BAR CUTTER - 4" x 1/2" x 1/2" LSA 3 1/2" x 3/4" L 45° MINER, 1 1/2" SQ.
3	720	PUNCH PRESS	15	F	CHELSEA	N/A	MAX. 1/4" HOLE IN 1/8" PLATE TABLE 22" x 36"
4	516	PUNCH	15	F	CLEVELAND	C	MAX. 1 1/2" HOLE IN 1/4" PLATE 12" THROAT
5	709	DRILL PRESS	10	F	TURNER	BECH	7 1/2" THROAT, 10" HEIGHT CLEARANCE, JACOBS CHUCK
6	710	DRILL PRESS	10	F	TURNER	BECH	7 1/2" THROAT, 13" HEIGHT CLEARANCE, JACOBS CHUCK
7	710	DRILL PRESS	10	F	BOUNVILLE	BECH	7 1/2" THROAT, 10" HEIGHT CLEARANCE, JACOBS CHUCK
8	10093	BAND SAW	10	G	MARVEL	D	TABLE 33" x 40" 10" THROAT 10" HEIGHT CLEARANCE
9	712	DRILL PRESS	3	E	ROCHELL	EFF-37	UP TO 2" DIA. HOLE 10" THROAT, 11" HEIGHT CLEARANCE, 20" x 30" T SAW TABLE
10	706	DUPLICATOR	3	E	WHITNEY	635 A	12" THROAT, 30 TONS PUNCH DIA. VS. MIL THK 3/16" 1/2" MIL 2" 1/4" 3" 1/2" 5" 106A.
11	707	PRESS BRAKE	5	E	CINCINNATI	N/A	175 TON MAX. STRIKE 10" 12"
12	730	PRESS BRAKE	5	E	BATH	C-3-10	120 TON 14"

AUG 1980

REF. NO.	WSSCO NO.	DESCRIPTION	AGE	CO.	MFG.	MODEL	CAPACITY
13	715	SHEAR	10	G	SHIPLEY	0112	MAX PLATE THK 1/4" 14' LONG
14	714	DISK SANDER	5	G	N/A	N/A	12" DIA. DISK TABLE 1' x 17"
15	N/A	BAND SAW	10	G	MARVEL	D	TABLE 33" x 40" 10" THROAT 10" HEIGHT CLEARANCE
16	734	CUT OFF SAW	8	G	MERCURY	N/A	20" DIA ABRASIVE CHUCK 2 1/2" PIPE TO 3"
17	715	ROLL FORMER	10	G	PEXTO	N/A	MAX. THK. 1/8" 4' LONG
18	10318	ROLL FORMER			PEXTO	110-E	MAX. THK. 1/8" 4' LONG
19	711	DRILL PRESS	10	G	BUFFALO	N/A	7 1/2" THROAT, 6" HEIGHT CLEARANCE, JACOBS CHUCK
20	714	PUNCH & NOTCH			WHITNEY	16	PORTABLE, HAND OPERATED PUNCH - 3/4" & THRU. 1/4" NOTCH - 6" NOTCH THRU 26 GA
21	756	SPOT WELDER	15	F	STRYCO	N/A	16" THROAT
22	741	NIBBLER	20	F	PULLMAX	D3	MAX. THK 3/16" 10" THROAT
23	754	LOCKFORMER EDGER	10	F	LOCKFORMER	N/A	MAX THK 16 GAUGE FORMS 1/4" FLANGES
24	743	LOCKFORMER PITTSBURG	10	F	LOCKFORMER	N/A	MAX. THK 20 GAUGE FORMS PITTSBURG LOCKS
25	757	FORMER	10	F	PEXTO	1527	MAX THK 16 GAUGE FORMS LAP JOINT, LAP JOINT, BEADS SHRINKS DIA. & ROLLS EDGES
26	710	PAN BRAKE	15	F	KRUMP	31	HAND OPERATED MAX. THK 20 GAUGE 4' LONG
27	1751	GRINDER	15	G	N/A	FEDERAL	2-WHEELS USED FOR TOOLS
28	764	LEAF BRAKE	15	F	N/A	N/A	HAND OPERATED MAX. THK. 16 GAUGE 6' LONG

BY: J.R. RUECKER
F & I DEPT.

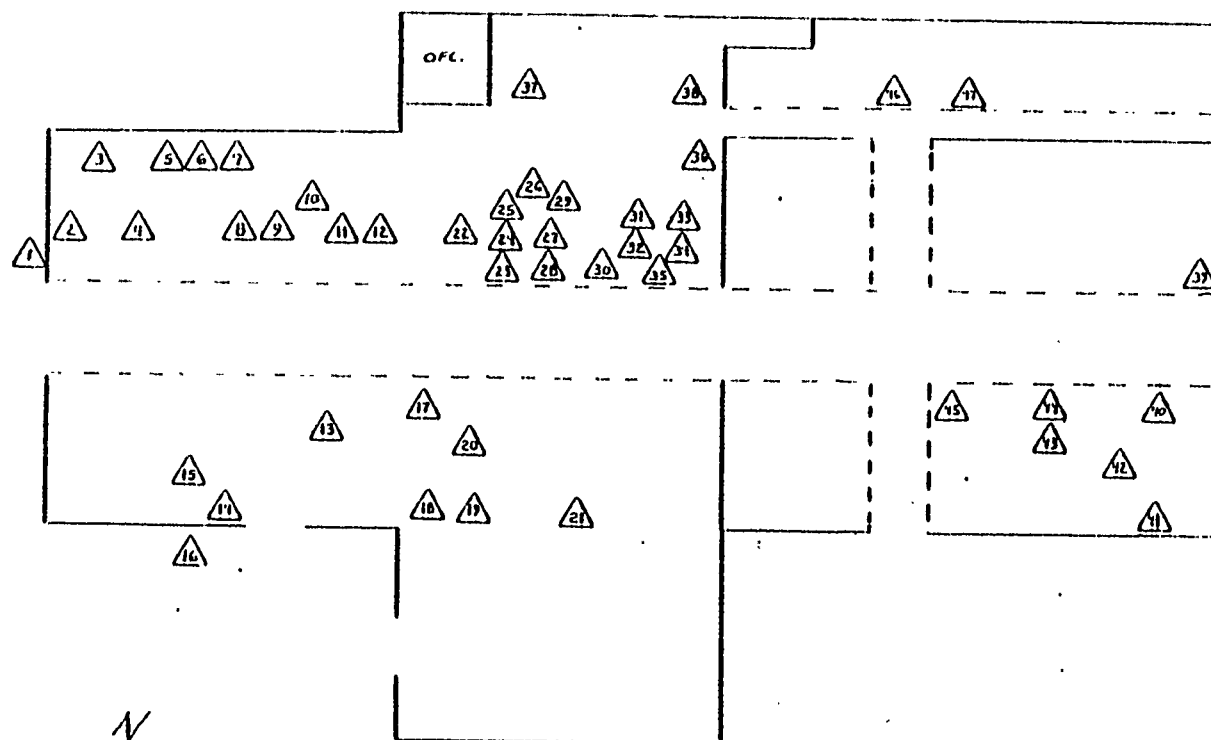
EQUIPMENT- SHEET METAL SHOP BLDG. 1

REF. NO.	MASSCO NO.	DESCRIPTION	QTY.	UNIT	CFG.	MFG.	MODEL	CAPACITY
29	718	LOCKFORMER PITTSBURG	10	F		LOCKFORMER	N/A	MAX. THK. 16 GAUGE FORMS PITTSBURG LOCKS
30	761	LCMF BRAKE	15	F		KRUMP	1014	HAND OPERATED MAX. THK. 16 GAUGE 8' LONG
31	714	DRILL PRESS	15	F		DELTA	N/A	7 1/2" THROAT, 22" HEIGHT CLEARANCE, JACOBS CHUCK
32	719	HAND PUNCH	15	F		WHITNEY	16	3/8" DIA. HOLE THRU 1/4" THK. MIL
33	721	BOX FOLDER	15	G		PEXTO	N/A	MAX. THK. 22 GAUGE 3' LONG
34	716	LOCKFORMER EDGER	15	F		LOCKFORMER	N/A	HAND OPERATED MAX. THK. 22 GAUGE
35	736	ROLL FORMER	15	F		PEXTO	3BI-b	HAND OPERATED MAX. THK. 16 GAUGE 3' LONG, MIN. DIA. 3"
36	765	BAND SAW	15	F		DELTA	N/A	20" THROAT 14" HEIGHT CLEARANCE
37	772	SHEAR	10	G		WYSONG	016	MAX. PLATE THK 16 GA. 8' LONG
38	705	PRESS BRAKE	5	F		DI-HERO	16-36	35 TON MAX. THK. 16 GAUGE 8' LONG
39	1753	GRINDER	15	F		N/A	N/A	2 - WHEELS USED FOR TOOLS
40	1752	GRINDER	15	F		N/A	N/A	2 - WHEELS USED FOR PRODUCTION
41	10292	CUT OFF SAW	10	F		BRILL MATTI	N/A	14" DIA. ABRASIVE WHEEL CUTS SHAPES & MAKES ANGLE CUTS UP TO 45°
42	722	ROD BENDER	15	F		O'NEIL-IRWIN	2 DI-AERO	MAX. ROD 3/8" DIA WITH A 1" RADIUS
43	750	DRILL PRESS	15	F		HOBART	1150 A	7 1/2" THROAT, 36" HEIGHT CLEARANCE, JACOBS CHUCK
44	766	DISK SANDER	15	F		ROCKWELL	N/A	TABLE 4' X 17" 12" DIA. DISK

AUG. 1980

[illegible]

BY: J. R. RUECKER
F & I. E. DEPT.



SHEET METAL SHOP
BLDG. 7
JUNE 1979
Jim R

EQUIPMENT- MACHINE SHOP BLDG. 8

AUG. 1960

REF. NO.	AMSCO NO.	DESCRIPTION / MODEL	SIZE	CAPACITY	VERT. TRAVEL	LONG. TRAVEL	TRANS. TRAVEL	SPINDLE	REF. NO.	AMSCO NO.	DESCRIPTION / MODEL	TABLE SIZE	VERT. TRAVEL	LONG. TRAVEL	TRANS. TRAVEL	SPINDLE
1	1504	LATHES - LEBLOID	32"	35"	25 1/2"	26 1/2"			1	1503	PLANNER - DETROIT & HARVEY	72 X 200	102"	102"	200"	100"
2	1506		50"	52 1/2"	35 1/2"	42"			2	1528	BRUNNEN 4-SPINDLE	36 X 70	34"	34"	70"	30"
3	1507	AMERICAN	32"	43"	32"	170"			3	1529	BRUNNEN 4-SPINDLE	54 X 111	40"	37 1/2"	111"	51"
4	1508	LODGE & SHIPLEY	N/A	60"	42"	174"										
5	1510	AXELSON	32"	34 1/2"	19"	96"										
6	1511	MONMARCH	36 MM	37 1/2"	20 1/2"	81"										
7	1512	33N	25N	33 1/2"	22"	120"										
8	1513	JONES & LANSON THREE *S	5"	21 1/2"	12 1/2"	29 1/2"			1	1502	V.T.L. MILL - BETTS	12" M.	6'-11"	6'	-	-
9	1515	LODGE & SHIPLEY - 2013	20"	20 1/2"	13 1/2"	70"			2	1505	- HENSLER & BENNER	48"	24 1/2"	-	-	-
10	1516	- X	20"	22"	15"	53"										
11	1517	AMERICAN PACEMAKER	18"	23"	13"	70"										
12	1518	CINCINNATI	18"	18 1/2"	11"	74"										
13	1519	LEBLOND	19"	18"	10"	53"										
14	1520	- REGAL	N/A	11"	8"	43"										
15	1521		N/A	11"	8 1/2"	30"										
16	1522	CLAUSING	12"	12"	7"	36"										
17	1523		12"	12"	7"	36"										
18	1524		10"	10 1/2"	5 1/2"	36"										
19	1526	BEHMANN HYDRATROL	36"	37 1/2"	5 1/2"	37 1/2"										
20	1522	ROCKWELL SERIES 85 7M	10"	10 1/2"	6"	24"										

REF. NO.	AMSCO NO.	DESCRIPTION / MODEL	TABLE SIZE	VERT. TRAVEL	LONG. TRAVEL	TRANS. TRAVEL	SPINDLE
1	1530	MILL - GARDIN VERTICAL	12 X 40	14 1/2"	26 1/2"	12"	"SMT"
2	1531	"3 CINCINNATI VERTICAL	15 X 54	16"	33 1/2"	15 1/2"	"SMT"
3	1532	"4 CINCINNATI VERTICAL	16 X 70	16"	41 1/2"	15 1/2"	"SMT"
4	1533	4CSM KERRY & THORPE 4-SPINDLE	14 X 40	10"	41 1/2"	11 1/2"	"SMT"
5	1538	VAN NOORDEN UNIVERSAL 13M	14 X 55	13 1/2"	30 1/2"	11"	"SMT"
6	1539	"2 CINCINNATI MILL 4-SPINDLE	12 X 40 1/2	16"	20"	14 1/2"	"SMT"
7	1540	"4 CINCINNATI MILL 4-SPINDLE	18 X 71	20"	11"	11 1/2"	"SMT"
8	1541	CLAUSING VERT. M. 8580	6 1/2 X 26	10 1/2"	17 1/2"	5"	"2 MT"
9	1533	CINCINNATI 11000 4-SPINDLE	30 X 72	60"	48"	48"	"SMT"
10	1534		40 X 72	72"	48"	50"	"SMT"

REF. NO.	AMSCO NO.	DESCRIPTION / MODEL	SIZE	CAPACITY	VERT. TRAVEL	LONG. TRAVEL	TRANS. TRAVEL	SPINDLE
1	1525	DRILL PRESS - BRICE RADIAL NO. 1010	12"	36"	40"	"1 MT"		
2	1526	CARLTON RADIAL	19"	96"	70"	"2 MT"		
3	1527	CINCINNATI RADIAL	13"	47 1/2"	60"	"5 MT"		
4	1535	ROCKWELL RADIAL 15 110	-	17"	20"	"2 MT"		
5	1536	ROCKWELL 15 SPINDLE	-	6"	23"			
6	1545	CRAFTSMAN NO. 113-11370	-	17 1/2"	42"	JALOUS		
7	1541	ROCKWELL NO. 15 665	-	7 1/2"	42"			
8	1564	BUFFALO 18"	-	9"	18"	"3 MT"		
9	1576	CLEGGMAN MODEL 33	-	24"	26"	N/A		

BY: J.R. RUECKER
F. & I.E. DEPT.

EQUIPMENT - MACHINE SHOP BLDG 3

AUG. 1980

REF. NO.	ANSSCO NO.	DESCRIPTION / MODEL	CAPACITY				REF. NO.	ANSSCO NO.	DESCRIPTION / MODEL	CAPACITY			
			TABLE SIZE	TABLE	TABLE	TABLE				TABLE SIZE	TABLE	TABLE	TABLE
1	1501	GRINDER - HAMMOND NO 10 C	1' X 12"	-	-	-	1	1511	MANDREL PRESS - DRAKE MODEL 3A1	-	-	-	-
2	1509	DRILL G M 17 1	-	-	-	-	2	1512	ROCKWELL HARDNESS TESTER - WH SUM - 562	-	-	-	-
3	1516	STERLING	2 1/2 DIA	-	-	-	3	1513	BURR KING MODEL 562	-	-	-	-
4	1517	10' HAMMOND NO 10-C	1' X 12"	-	-	-	4	1514	DIE FILER KELLER MODEL 1A	-	-	-	-
5	1518	HARK (SURFACE) S LID	2' X 10"	11 1/2"	10"	1 1/4"	5	1554	DUST KOP MODEL 11051	-	-	-	-
6	1512	HAMMOND MODEL 4	-	-	-	-	6	1555	MAGNE-TECH MODEL 3511	-	-	-	-
7	1551	CINCINNATI #2	8 1/2 X 36	-	-	0 1/2"	7	1557	MANDREL PRESS - HILLS NO. 3A1	-	-	-	-
8	1552	CINCINNATI #0	-	-	-	-	8	1560	IND TOOL WID. PRESS - ENERMAC	-	-	-	-
9	1553	BLICK E DECKER	-	-	-	-	9	1565	BURR KING MODEL 562	-	-	-	-
10	1550	MILLER WIRE BUTTER	-	-	-	-	10	1566	PUNCH PRESS WHIRNEY MODEL 11B	1 1/2 DIA	-	-	-
11	1563	-	-	-	-	-	11	1571	TRACER - CADILLAC MODEL A-111-8	-	10"	-	-
12	-	-	-	-	-	-	12	1577	ELECTRO AIR DISINFECTOR 2MSA	-	-	-	-
							13	1578	DISC & BELT SANDER - DOSCH	-	-	-	-
							14	1579	MILL - MASTER PORTABLE	-	-	-	-
							15	1580	IND BALANCER - STEWART WARNER	-	-	-	-
							16	1570	BLAST CABINET - TANG BORN	-	-	-	-
							17	1571	MILL - MASTER PORTABLE	-	-	-	-
							18	1572	GRINDER - KALAMAZOO	6' DIA	-	-	-
							19	1573	-	-	-	-	-
							20	1575	-	-	-	-	-

BY: J.R. RUECKER
F / I.E. DEPT.

EQUIPMENT- FOUNDRY BLDG 9

REF. NO.	ASSCO NO.	DESCRIPTION	AGE	END	MFG	MODEL	CAPACITY
1	349	TUMBLER	30	F	N/A	N/A	65" LONG 20" DIA. ID
2	367	MOLD BURNER	50	F	SPO	N/A	PORTABLE OPENING 17" HEIGHT HOLDING PLATES 17X21
3	347	MOLD BURNER	50	F	SPO	113 J	PORTABLE OPENING 17" HEIGHT HOLDING PLATES 20X25"
4	1771	GRINDER	30	F	N/A	N/A	1-WHEEL 24X3" MOUNTED ON OVERHEAD MONORAIL
5	361	DO ALL SAND	30	G	LEMYER	2W3L 20	35" THROAT, 20" HEIGHT CLEARANCE, 30X30" TILT TABLE
6	1707	GRINDER	40	G	N/A	PERISTAL	2-WHEELS USED FOR PRODUCTION
7	1706	GRINDER	50	F	N/A	PERISTAL	2-WHEELS USED FOR PRODUCTION
8	358	SAND SAND	20	G	WALKER	N/CB	16" THROAT, 8" HEIGHT CLEARANCE, 20 X 20" TILT TABLE
9	379	OVEN	30	G	FOHLEI SAND	N/A	3-DRUMS 2 @ 12" H X 4' D X 5' W 1 @ 10" H X 4' D X 5' W
10	370	SAND MIXER	40	F	BLYSTONE	N/A	6 CU. FT 40" LONG, 30" DIA.
11	376	BONES PIT FURNACE	40	F	ASSCO	N/A	MAX. 300 LB. CAP 30" DEEP, 20" DIA.
12	357	CORE DRING OVEN	50	G	VIA	N/A	14' L X 8' H X 7' W NATURAL GAS
13	352	SAND MIXER	10	G	BUDMEY	N/A	200 LBS PER MIN.
14	353	SAND TURB.	5	G	SCOTT	ST1000	500 LBS PER MIN.
15	356	ROD FEED	20	G	BEARDSLEY	K254	5-TONS BIN DIA. 5' TUBE DIA. 6'

AUG. 1980

REF. NO.	ASSCO NO.	DESCRIPTION	AGE	END	MFG	MODEL	CAPACITY
16	390	MULLER	40	F	HIMPSON	HD2	1000 LBS CAP
17	389	SHAKEOUT	50	F	HIMPSON	065XL	SIZE 5' X 2'
18	359	SAND SLINGER	30	G	BEARDSLEY	NF403X	770 LB. CAP/PER MIN. RAMMING CAP 6" RAM ARM
19	393	CUPOLAS	30	G	N/A	N/A	30" DIAMETER BORE IRON MELT COKE FIRED
20	540	CUPOLAS	30	G	N/A	N/A	36" DIAMETER BORE IRON MELT COKE FIRED

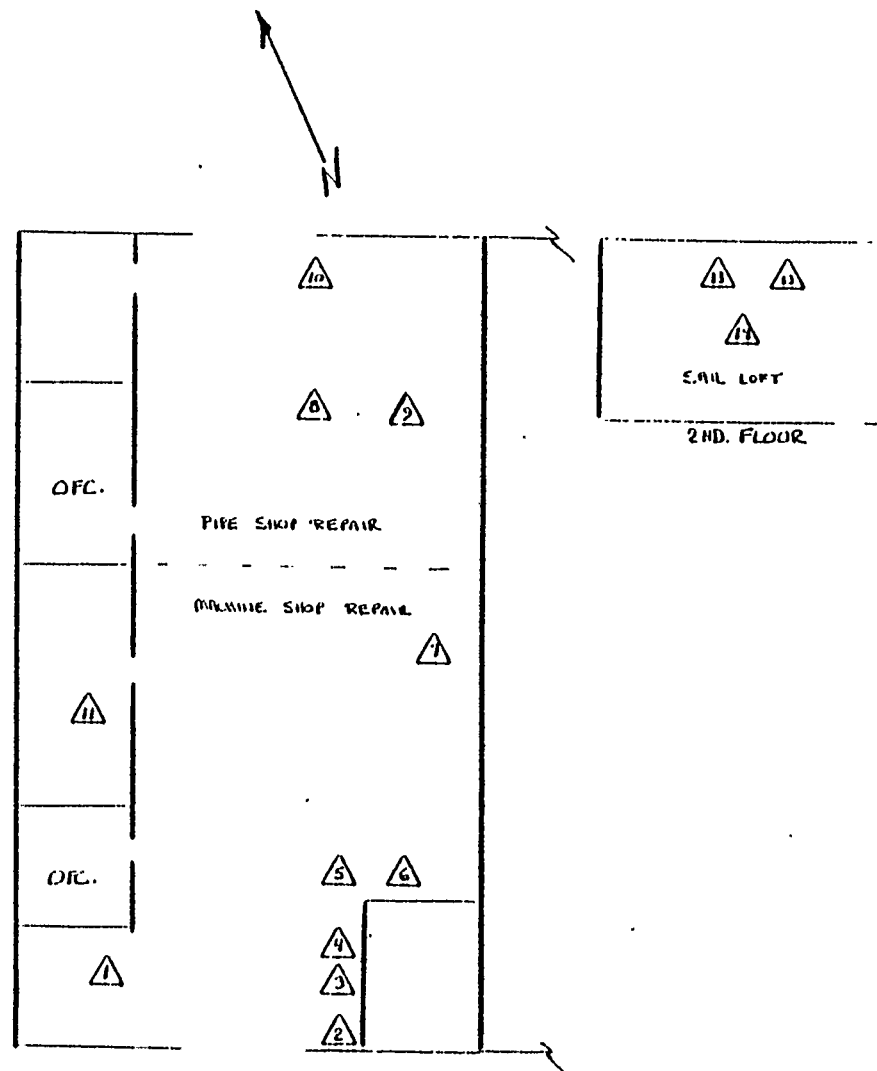
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E.I.E. DEPT.

EQUIPMENT -- BLDG. 11 PIPE & MACHINE SHOP REPAIR, 4' SHIL LOFT

AUG. 1980

REF NO	MASSCO NO.	DESCRIPTION	A G E	C O D	MFG.	MODEL	CAPACITY
MACHINE SHOP REPAIR							
1	N/A	PRESS	35	P	N/A	N/A	WIDTH OF OPENING 44" HEIGHT OF OPENING 44"
2	1717	GRINDER	24	F	N/A	PERKINS	2 WHEELS USED FOR TOOLS
3	34	DRILL PRESS	25	F	DELTA	DP220	BENCH TYPE 7 1/2" THROAT, 10" HEIGHT CLEARANCE, JACOBS CHUCK
4	35	DRILL PRESS	25	F	BUFFALO	16	BENCH TYPE 8" THROAT, 10" HEIGHT CLEARANCE, MOSE TAPER PINNIE
5	309	BAND SAW			MANUEL	2	6' X 2" MAX.
6	310	THICKENER			WILCO	999	PORTABLE UP TO 2" DIA.
7	951	BAND SAW	30	F	AMERICAN	N/A	26" THROAT, 4 1/2" HEIGHT CLEARANCE, 22 X 26" TILT TABLE
PIPE SHOP REPAIR							
8	225	THICKENER	5	G	RIDGID	535	PORTABLE 1/8" TO 2" DIA.
9	1715	GRINDER	24	F	N/A	N/A	2 WHEELS USED FOR TOOLS
10	N/A	BAND SAW	5	F	ROCKWELL	9	6" MAX.
11	N/A	GRINDER	24	F	N/A	N/A	2 WHEELS USED FOR TOOLS
SHIL LOFT							
12	10321	SEWING MACH.	40	F	SINGER	SMALL	USED FOR CANVAS
13	308	SEWING MACH.	40	F	SINGER	SMALL	USED FOR CANVAS
14	307	SEWING MACH.	40	F	SINGER	7.31	USED FOR CANVAS

BT: J.R. RUECKER
F 41 E. DEPT.



BIDG. 11
 PIPE REPAIR
 MACH. REPAIR
 SAIL LOFT

EQUIPMENT - CARPENTER SHOP BLDG 19

REF. NO.	MASSCO NO.	DESCRIPTION	TYPE	CON.	MFG.	MODEL	CAPACITY
1	946	SAWDUST COLLECTOR	10	F	N/A	N/A	5'DIA. X 8' DUST COLLECTOR CYCLONE, 25HP, 900 RPM
2	910	JOINTER	10	F	CRESCENT	2302	16" MAX CUT TABLE 20" X 7'
3	1742	GRINDER	1	G	SEARS	PEDESTAL	2-WHEELS USED FOR TOOLS
4	1755	GRINDER	6	G	SEARS	377	BENCH MODEL 2-WHEELS SPECIAL ATTACHMENTS FOR DRILL BITS & SAW BLADES
5	944	BAND SAW	10	F	DELTA	103	13 1/2" THROAT, 6" HEIGHT CLEARANCE, TABLE 14 X 14
6	1748	GRINDER	10	G	MILLER-TALLS	81	BENCH MODEL 2-WHEELS USED FOR TOOLS
7	909	DRILL PRESS	5	G	ROCKWELL	15-017	7 1/2" THROAT, 36" HEIGHT CLEARANCE, TABLE 10 1/2" X 10" JACOBS CHUCK 1/2"
8	10152	BAND SAW BLADE WELDER	3	G	STRYCO	MF 3	UPTO 1 1/2" BLADE
9	918	LATHIE	3	G	POWERMATIC	90	MAX STOCK LENGTH 36"
10	942	DRILL PRESS	10	F	ROCKWELL	N/A	8 1/2" THROAT, 18" HEIGHT CLEARANCE, TABLE 24 X 11", JACOBS CHUCK 1/2"
11	908	TABLE SAW	10	F	CRESCENT	N/A	10" DIA BLADE MAX DEPTH OF CUT 3 1/2" MAX RIP TO RIGHT OF BLADE 10 MAX RIP TO LEFT OF BLADE 20
12	914	STENCIL CUTTER	5	G	DIAGRAM	JUMBO	2" STENCILS ALPHA & NUMERIC
13	902	TABLE SAW	10	F	TANNEWITZ	TYPE 4	MAX DEPTH OF CUT 3 1/2" MAX RIP TO RIGHT OF BLADE 36" MAX RIP TO LEFT OF BLADE 11" WITH HOLZ-MER WIL FEEDER TYPE E1-117

AUG. 1980

REF. NO.	MASSCO NO.	DESCRIPTION	TYPE	CON.	MFG.	MODEL	CAPACITY
14	957	SHAPER	10	G	YATES	4	VERTICAL SINGLE 1" SPINDLE, TABLE 18 X 41"
15	926	PLANER SURFACER	10	F	ORTON	25	SINGLE SURFACE UP TO 30" WIDE
16	905	BELT SANDER	10	F	SEARS	103	6" WIDE BELT TABLE 11 X 20"
17	901	BAND SAW	10	F	CRESCENT	N/A	31" THROAT, 11" HEIGHT CLEARANCE, 20 X 32 TILT TABLE
18	916	BAND SAW	10	G	N/A	N/A	37" THROAT, 12 1/2" HEIGHT CLEARANCE, 30 X 37 TILT TABLE
19	918	SHAPER	10	F	SEARS	113	PORTABLE, VERTICAL SINGLE SPINDLE, TABLE 13 1/2 X 27"
20	954	PLANER	10	F	ORTON	D-1	SINGLE SURFACE UP TO 30" WIDE
21	491	RADIAL ARM SAW	2	G	DeWALT	3571	20" BLADE TABLE EXTENDED TO LEFT 15" TABLE EXTENDED TO RIGHT 15"
22	24	TABLE SAW	10	F	TANNEWITZ	N/A	MAX DEPTH OF CUT 3 1/2" MAX RIP TO RIGHT OF BLADE 50" MAX RIP TO LEFT OF BLADE 20"
23	945	RADIAL ARM SAW	10	F	DeWALT	N/A	12" BLADE TABLE EXTENDED TO LEFT 12" TABLE EXTENDED TO RIGHT 4"
24	253	RADIAL ARM SAW	10	F	DeWALT	GE 65	16" BLADE TABLE EXTENDED TO LEFT 10" TABLE EXTENDED TO RIGHT 6"
25	N/A	BAND SAW	1	G	SEARS	12"	12" THROAT, 11" HEIGHT CLEARANCE, 12 1/2 X 14" TILT TABLE
26	33	RADIAL ARM SAW	10	F	DeWALT	35020	20" BLADE TABLE EXTENDED TO LEFT 15" TABLE EXTENDED TO RIGHT 10"

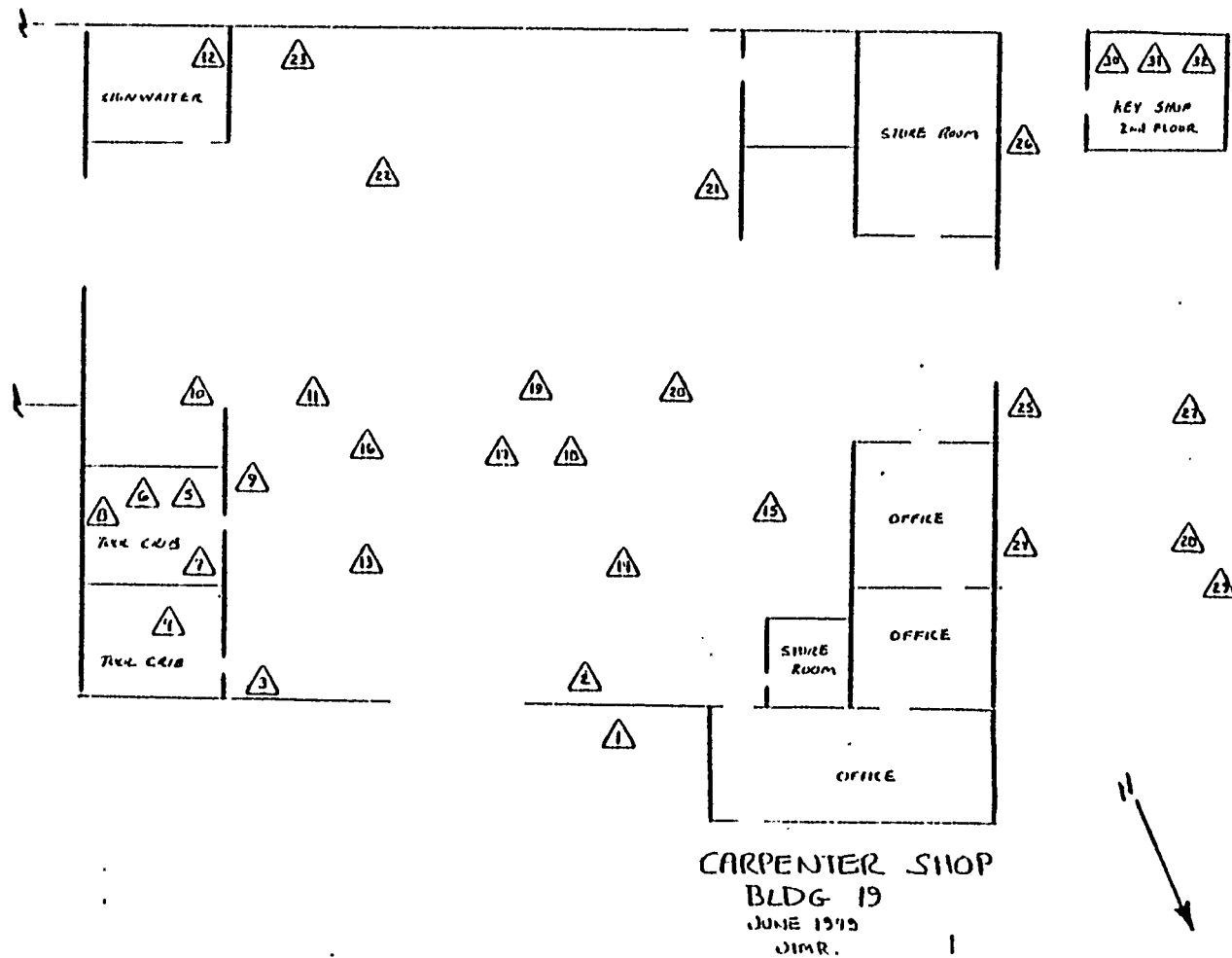
BY: J.R. RUECKER
F A I E DEPT

L. GUINMET - CARPENTER SHOP BLDG. 19

AUG. 1980

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BY: J. R. RUECKER
I. & T. F. DEPT.



EQUIPMENT - PATTERN SHOP BLDG. 43

REF. NO.	NASSCO NO.	DESCRIPTION	AGE	COND.	MFG.	MODEL	CAPACITY
1	384	RADIAL SAW	20	F	COMET	JR	12" DIA. BLADE 19' X 70" TABLE
2	368	JOINTER	30	G	CRESCENT	P-24	MAX. WIDTH 24" MAX. HEIGHT 8"
3	377	PLANER	30	G	CRESCENT	N/A	MAX. CUTTER WIDTH 12" TABLE LENGTH 6'
4	363	BAND SAW	40	F	N/A	N/A	34" THROAT, 8" HEIGHT CLEARANCE, 31' X 38" TILT TABLE
5	373	BAND SAW	40	F	N/A	N/A	30" THROAT, 12" HEIGHT CLEARANCE, 24' X 28" TILT TABLE
6	1711	GRINDER	20	G	SEARS	BENCH	2-WHEELS USED FOR TOOLS
7	387	BUFFER	20	G	STANLEY	246A	2 WHEELS
8	367	LATHE	30	G	N/A	N/A	MAX. DIA. 12" MAX. LENGTH 50" WOOD ONLY
9	382	SHEAR	10	G	N/A	N/A	MAX. WIDTH 13" USED FOR BRASS SHEETS
10	381	ENGRAVER	15	G	HERMES	N/A	MAX. LETTER HEIGHT 4"
11	391	HAND LETTER PUNCH	30	F	ROOVERS	136	7/8" WIDE METAL TAPE
12	366	LATHE	50	P	N/A	N/A	MAX. DIA. 22" MAX. LENGTH 5' WOOD ONLY
13	380	DRILL PRESS	30	F	WHITKER	BENCH	7 1/2" THROAT, 30" HEIGHT CLEARANCE, JACOBS CHUCK
14	369	DRILL PRESS	20	G	DELTA	PEDESTAL	8 1/2" THROAT, 30" HEIGHT CLEARANCE, JACOBS CHUCK
15	1740	DISC SANDER	30	G	KIMOT	N/A	24" DIA DISC 12' X 29" TABLE

NOV. 1980

REF. NO.	NASSCO NO.	DESCRIPTION	AGE	COND.	MFG.	MODEL	CAPACITY
16	371	SPINDLE SANDER	15	E	KIMOT	25 P	MAX. SPINDLE DIA. 8" HIGH SLED 3" 4" MAX DIA. SPINDLE HEIGHT 11 1/2" TABLE 30' X 24'
17	365	TABLE SAW	3	E	ROCKWELL	34-450	10" DIA. BLADE MAX. DEPTH OF CUT 3 3/8" MAX. THK. OF 45" CUT 2 1/8" MAX. RIP TO LEFT OF BLADE 15 1/2", MAX. RIP RIGHT OF BLADE 25"
18	392	BELT SANDER	20	G	PACIFIC	N/A	2" WIDE BELT
19	364	TABLE SAW	20	G	SEARS	101	PORTABLE DIA. BLADE 10 1/2" MAX. DEPTH OF CUT 1 1/4" MAX. RIP TO LEFT OF BLADE 8", MAX. RIP TO RIGHT OF BLADE 11 1/2"

BY: J.R. RUECKER
DATE: 10/1

EQUIPMENT - BOILER SHOP BLDG 73

AUG 1980

REF NO.	ANSCO NO.	DESCRIPTION	AGE	COND N	TYPE	MODEL	CAPACITY
1	952	BAND SAW	30	P	1 BOX III	N/A	34" THROAT, 7" HEIGHT CLEARANCE, 31" X 38" TILT TABLE
2	N/A	CUT OFF SAW	20	G	MERCURY	N/A	20" DIA. ABRASIVE WHEEL 3" THK. MTL.
3	71	HACK SAW	15	P	MINI-VEL	2	PORTABLE 5" THK. MTL.
4	1181	BRICK SAW	14	G	CLIPPER	N/A	14" DIA. ABRASIVE WHEEL 20" X 13" TABLE
5	1182	BRICK SAW	14	G	CLIPPER	N/A	14" DIA. ABRASIVE WHEEL 20" X 13" TABLE
6	1720	GRINDER	10	G	N/A	PERISTAL	2-WHEELS USED FOR PRODUCTION
7	73	DRILL PRESS	20	F	DELTA	BOX II	8" THROAT 8" HEIGHT CLEARANCE, 22" X 13" TABLE, MORSE TAPER SPINDLE
8	1721	GRINDER	15	G	MILLER	BOX II	2-WHEELS USED FOR TOOLS
9	72	HACK SAW	20	P	T&S ENG.	201	PORTABLE 2" THK. MTL.
10	N/A	LATH	30	P	AMERICAN	N/A	10" MAX DIA. 8' LONG ECD
11	10872	DRILL PRESS	30	P	BARNES	N/A	10" THROAT, 24" HEIGHT CLEARANCE, 17" DIA TABLE, MORSE TAPER SPINDLE

BY: J.R. RUCKER
FILE DEPT

EQUIPMENT - N/C CARPENTER SHOP BLDG. '19

AUG 1980

REF. NO.	NASCO NO.	DESCRIPTION	AGE	MAKE	MODEL	CAPACITY
1	906	DRILL PRESS	10	DELTA	N/A	7" THROAT, 36" HEIGHT CLEARANCE, JACOBS CHUCK
2	10570	BAND SAW	2	SCHEER	N/A	12" THROAT, 5" HEIGHT CLEARANCE, 18" X 19" TILT TABLE
3	N/A	RADIAL ARM SAW	6	DEKMET	710	10" DIA BLADE 3" MAX THK TABLE 22" X 10"
4	N/A	TABLE SAW	6	ROCKWELL	34-140	10" DIA. BLADE MAX. DEPTH OF CUT 3 1/2" MAX. DEPTH OF CUT AT 15° 2 1/2" MAX. RPT. TO RIGHT OF BLADE 25" MAX. RPT. TO LEFT OF BLADE 15" MAX. WIDTH OF DADO 1 1/2"
5	1723	SKIDDER	10	N/A	PEDESTAL	2 WHEELS USED FOR TRAILS
6	904	RADIAL ARM SAW	10	COMET	N/A	MAX DEPTH OF CUT 5" TABLE 32" X 16"
7	924	BAND SAW	10	YATES	N/A	24" THROAT, 12" HEIGHT CLEARANCE, 20" X 24" TILT TABLE

BY: J.R. ROECKER
DATE: DEPT

BURNING EQUIPMENT

AUG 1980

NAASCO NO.	MIG CODE	DESCRIPTION	AGE	COND	TYPES OF CUTS	QTY	LOCATION	NO OF TORCHES	TORCH TYPE	IN/MIN	CONTROLS				MAX. PLATE SIZE FT.	TABLES		FL. MOVING		TORCH 90°	SPECIFICATIONS REF CHART			
											OPT.	CNC	RA- SH-N	WAL- GAS		TOTAL NO.	NO USED	FL. MOVING	FL. MOVING		TOT. BEV 4' 10"	TOT. BEV 4' 10"	TOT. BEV 4' 10"	TOT. BEV 4' 10"
STATIONARY EQUIPMENT																								
10101	CM-56	SHAPE CUTTER	15	P	SHAPE & LONGITUDINAL	1	CH-59B	1-6	C67	2-120	X			X	10X42	1	1	-	-	I	II (A)	III (A)	IV (A)	
10868	CM-60		10	P			CH-593	1-9		2-30	X			X	10X40			-	-					
10869			12	F			CH-595				X			X				-	-					
536	CM-70		7	P			CM-2000	1-6	C52	0-30 0-40 0-40	X	X		X	10X42	1	2	X			II	III	IV	
537	CM-100	FLAME PLANNER	6	G	LONGITUDINAL		CM-2010	1-12	C67	0-30 0-40 0-40	-	-		X				-	-					
538	CM-150	SHAPE CUTTER	4	F	SHAPE & LONGITUDINAL			1-2	PCM-B	0-30 0-40 0-40		X	X		10X40			X		VI				
	CM-160		2	G				1-8	C67	0-30 0-40 0-40	X			X	10X42				X	I	II (A)	III (A)	IV (A)	
10875		FLAME PLANNER	1		LONGITUDINAL		BLDG-60	1-121		0-60	-	-		X		1	1	-	-		II	III	IV	
PORTABLE EQUIPMENT																								
	CM-37	3-WHEEL CUTTING MACH			CIRCLES & LONG RADII	1	-	1	C67	0-60	-	-		X	-	-	-	-	-	I	-	-	-	-
	CM-45	CUTTING MACH			LONGITUDINAL	39	RATENS	1-3			-	-		X	-	-	-	-	-	I	II	III	IV	
	BUG-0	CUTTING MACH. APPROX TRACK			LONGITUDINAL, VERTICAL, OVERHEAD, ETC.	32	WAYS	1			-	-		X	-	-	-	-	-	I				
HAND EQUIPMENT																								
	C-66	HAND TORCH			ALL TYPES	2500	YARD	1	C66	-	-	-		X	-	-	-	-	-	I	-	-	-	-

(A) LONGITUDINAL CUTS ONLY

BY: J.E. ROECKER
FATE DEPT

EQUIPMENT - WELDING

REF. NO.	DESCRIPTION	MFG.	MODEL	QTY	CAPACITY			
					USE	NO. OF OPCS.	AMPS	AC DC
1	POWER SUPPLY	AIRCO	CAV 200	3	MIG	1	200	- X
2		MILLER	SRA 200	2				
3		P & H	III 200	2				
4			SR 200	1				
5		LINDE	SVI 203	4				
6			VI 203A	23				
7		AIRCO	PA 1, 3	5			300	
8			UCFA 300AM	15				
9			BUMBLE BEE	28				
10		ESAB	LCA 275	41				
11			IAE 315	25				
12		LINDE	SVI 300	2				
13		LINCOLN	R35 300	14				
14		MILLER	SR 300	1				
15			MP 30R	18				
16		P & H	CV CWT 300	30				
17		NATIONAL CYC. GAS	URM 300	20				
18		WESTINGHOUSE	R35 250	8				
19			WSH 300	3				
20			RA 300	1				
21			ROP 300	3				
22		THERMAL ARC	PCII 250	1				
23		GILLILAND	MIG 2000	5				
24		AIRCO	WADIS 24P	1			400	
25		ESAB	LBA 400	42				
26			LAA 410	1				
27		THERMAL ARC	PCII 400	1				
28		AIRCO	ADT 500	1			500	
29		LINDE	VI 500	1				
30		NATIONAL CYC. GAS	IN RUSORHA	1				
31		GILLEN PACIFIC	500DC	1				
32		AIRCO	FC (TV)	1			600	
33			FC (HA)	1				
34		COBRAMATIC	600	2				
35		LINDE	VI 600	2				
36		LINCOLN	R35 600	2				
37		MILLER	FC 65E	1				

JUNE, 1979

REF. NO.	DESCRIPTION	MFG.	MODEL	QTY	CAPACITY			
					USE	NO. OF OPCS.	AMPS	AC DC
38	POWER SUPPLY	P & H	CFT 600	19	MIG	1	600	- X
39		WESTINGHOUSE	RS 600	1				
40			RS 600	1				
41		ESAB	LBA 750	3	SUB. AG		800	
42			LCA 800	12				
43		LINDE	VI 800	2	ELECTRON BEAM			
44			VF 1000	7	STICK	PHILLI	1000	
45		NATIONAL CYC. GAS	DA-A11000	10				
46		P & H	N/A	1				
47		ESAB	LCA 1200	1			1200	
48		PHITS	N/A	1				
49		WESTINGHOUSE	RS-1200	1				
50		ESAB	LAD 1100	5			1100	
51		AIRCO / A.O. SMITH	N/A	6			1500	
52		DURLINE	N/A	8				
53		K.S.M.	STUD	2	STUD	1		
54		N.E.W.		3				
55		P & H		8				
56		VICKER		8				
57		MIK PRODUCTS	MI DANNER	1	STICK	1	1100	
58		MILLER	MIK VIII	18		8		
59			SARC-11P	51				X
60			320/ABP	51				
61		LINDE	HDA 300	3	TIG	1	300	
62		MILLER	TIG RIG	12				
63		P & H	HFGW 300	3				
64			HFGW 500	1				
65		WESTINGHOUSE	TWS-300	2				
66		LINCOLN	TM 300	93	MR ARC			
67		P & H	TH 300	58				
68		WESTINGHOUSE	TC JE	65				
69			AC-65	3				
70		A.O. SMITH	A-400L	47			400	
71		NATIONAL CYC. GAS	SAC 400	53				
72		ESAB	TAC 1000	1			1000	
73		LINCOLN	TM 1000	2				
74		ESAB	TAC 1500	5			1500	

BY J. R. RUECKEL
P. J. E. DEPT

EQUIPMENT - WELDING

REF. NO.	DESCRIPTION	MFG.	MODEL	QTY.	CAPACITY				AC	DC
					USE	NO. OF OPER.	AMPS			
75	POWER SUPPLY	NELSON	TRIDUON	1	STUD	1	1000		-	X
76	MOTOR GEN.	LINCOLN	STABLE ARC	2	AIR ARC		200		-	
77		GENERAL ELECTRIC	N/A	1					-	
78		LINCOLN	SAB 300	13			300		-	
79		GENERAL ELECTRIC	N/A	10					-	
80		LINCOLN	SAB 400	7			400		-	
81		GENERAL ELECTRIC	N/A	3					-	
82		HOBART	MIN 604	2			600		-	
83		LINCOLN	SAB 600	3					-	
84			SA 750	5			750		-	
85			SA 800	3			800		-	
86		GENERAL ELECTRIC	N/A	2			1500		-	

JUNE 1979

REF. NO.	DESCRIPTION	MFG.	MODEL	QTY.	TYPE	CAPACITY				AC	DC	AMPS	CUTTING	SPEED	WHEEL SIZE
1	WELDER	LINDE	CONSTANT CURRENT CONSTANT VOLTAGE DS 45	5	SUB. ARC										
2				1											
3				3											
4		LINCOLN	LAF 3	1											
5		ESAB	ACDT	5											
6			A 2	5	SINGLE HEAD AUTO.										
7		WELD MATION	"KAT"	3											
8		ESAB	AL DK	6	DUAL HEAD AUTO SUB. ARC										
9		M-K. PRODUCTS	BOBBI. W. MK 12	2	DUAL HEAD AUTO MIG							750	WATER	0 60"	70 1 1/2"
10		LINDE	N/A	5	ELECTRO SLAG										
11				4											
12		M-K. PRODUCTS	PACK PAT	5	AUTO. SHIRT PIG.									6 120"	
13			WIGGLER	15										1 10 1/2"	65 9 1/2"
14		GENERAL ELECTRIC	IGNITRON	1	SPOT										
15		DAYTON	2E 5V3	1											
16		KSM	SERIES D	1	STUD										
17			SERIES 450	1											
18			POWERMATIC	2											
19			PK 3E	3											
20			SAFEGRIND	1											
21			SERIES 450	1											
22		NELSON	NS-20 MID	1											
23			NS-20 LOW	15											
24			NS-20 HIGH	15											
25		STRYCO	PIF 3	2	BANDSAW								AIR		
26		ESAB	N/A	75	GRAVITY										
27		IRICO	WASP	2	GAS DRIVEN				X	X		200			
28		MILLER	REA DOUBLE	3								225			

BY: J.R. RUECKER
F A I C DEPT.

EQUIPMENT - WELDING

REF. NO.	DESCRIPTION	MFG.	MODEL	QTY	USE	CAPACITY				WIRE SIZE
						AMPS	WELDING	TORCH	WIRE	
1	TORCHES	AIRCO	AH-30-F	5	MIG	300	AIR	60"	.015 .020 .035 .045 1/16	
2			AH 50-F	1		500			.038 .045 1/16 1/8	
3			AH-35-C	3		550	WATER	PISTOL	.010 .015 .020 .038 .045 1/16	
4			AH 50 AI	2		600			.035 .045 1/16 1/8	
5		ESAB	A 9	5		200	AIR	90"	.024 - 1 1/8"	
6		LINDE	ST-B	12				60"	.030 .035 .045 1/16	
7			SF-13	5		250			.010 .015 .035 .045 1/16	
8		M.K. PRODUCTS	MK-3A	100		300	WATER		.030 .035 .045 1/16 1/8	
9			LINK COVER	50		500			.030 .035 .045 .052 1/8	
10		GILLILAND	N/A	5		N/A	N/A	N/A	N/A	
11		LINDE	HW 2	12	MIG	110	AIR	60-90"	.020 - 1/16	
12			HW 11	1		N/A	N/A	N/A	N/A	
13			HW 12	1		500	WATER	N/A	N/A	
14			HW 1B	20		300		60-90"	.020 - 1/16	
15			HW 20	15		240		90"	.020 - 1/8"	
16			HW 24	5		75	AIR	60-90"	.020 - 1/16"	
17		AIRCO-AIR	T 5	10	AIRARC	N/A	N/A	N/A	N/A	

JUNE 1979

REF. NO.	DESCRIPTION	MFG.	MODEL	QTY	TYPE	CAPACITY				WIRE SIZE
						WIRE	SPEED	TORCH	SPool DIA.	
1	FEEDERS	MILLER	30A	2	CORE		100			
2		NATIONAL CYC-6AS	50 S	2						
3		LINDE	SNM 23	3			60-100	AIR-100	12"	N/A
4		MILLER	MWTS01	3						
5		AIRCO	AHF R1	5	MIG	N/A	N/A	AH104	12"	.030 .035 .045 1/16
6			AHF-L1	1		N/A				
7		ESAB	A 9	15			1/2-5/8	AIR	N/A	.010 - 1/8"
8		LINDE	SNM-10	12			0-550		8"	.030 .035 .045
9		M.K. PRODUCTS	MK-3A	150				WATER	N/A	.030 .035 .045 .052
10		GILLILAND	MFA-100	5						

1	CARRIAGES	AIRCO	AD-20	1	-	N/A	-	-	-	-
2		A.O. SMITH	CLIMBER	5	-	N/A	-	-	-	-
3		BUG-O	MK 12	32	-	2-360	-	-	-	-
4		LINDE	CM 15	39	-	4-32	-	-	-	-
5			CM 22	39	-	0-60	-	-	-	-
6		WELD MOTION	"KAT"	5	-	N/A	-	-	-	-

BY: JR RUECKER
F I E DEPT.

EQUIPMENT - WELDING

JUNE 1979

REF. NO.	DESCRIPTION	MFG	MODEL	QTY			
1	GRID WICKS	DURALINE	2100 N	15			
2			2100 H				
3		N.E.W.	1005 B3				
4			20812				
5			1007CK				
6		DURALINE	MINI	100			
1	WATER COOLERS	MASSCO	N/A	4			
2		LINDE	WC-2	1			
3			WC-6	2			
1	FOOT CONTROLS	ARCTROL	ME-12	10			
2		MILLER	MFC-23A	1			
3		P&H	FKS-1	1			
1	VACUUMS	INVINCIBLE	460	2			
2		TORONADO	8700C	10			
3			8700A	1			
1	PLASMA	LINDE	FSH-5	3			
2		THERMAL ARC	FAK-11	1			
3			CC 50	1			
4			CC 60	1			
5			REM H-1	1			
6			REM-6 B	1			

BY: J. R. RUECKER
I. / L. L. DUFF.

AUG. 1980

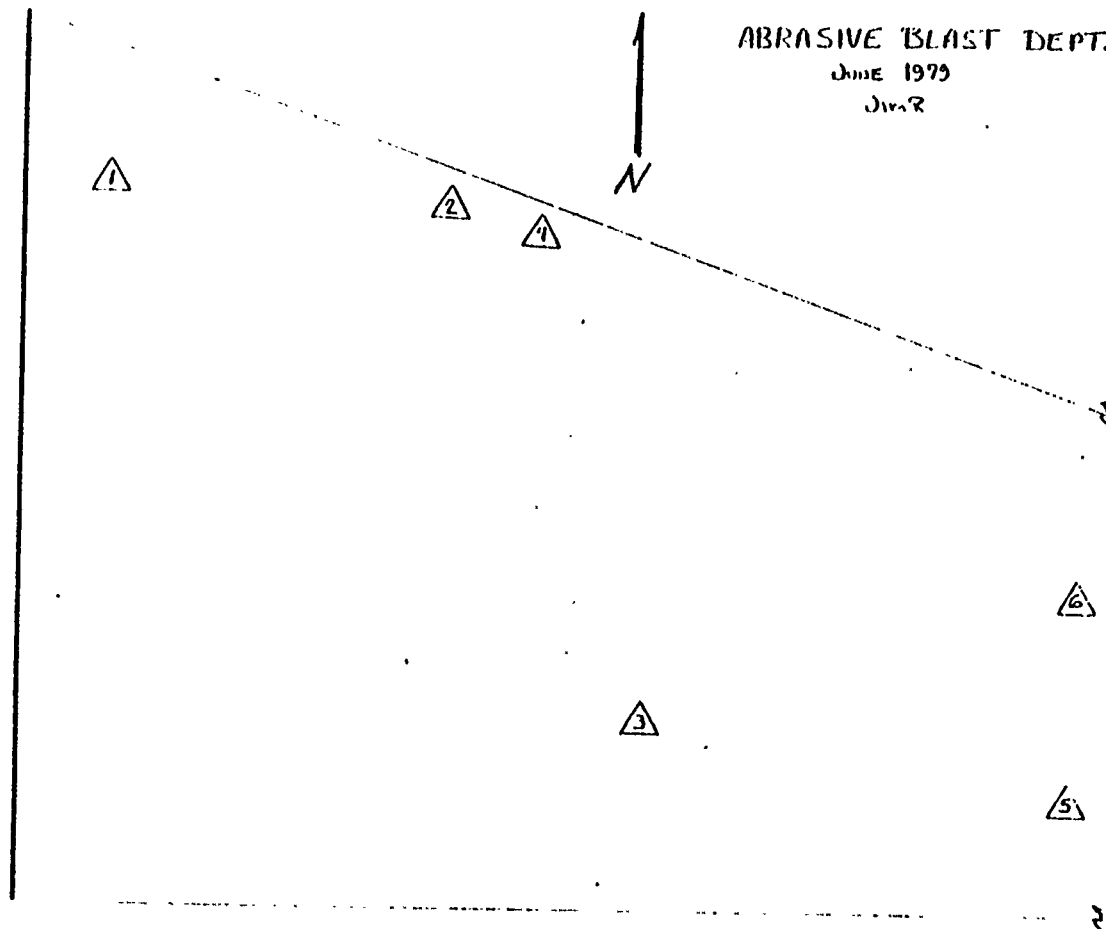
REL. NO.	MASSCO NO.	DESCRIPTION	AGE	COLOR	MFG.	MODEL	CAPACITY
1	165	AIR DRYER/ RECEIVER			ZURN	R 340-A	CONTINUOUS DUTY CAP INLET AIR 107' / 2" AND 3" DIA
2	655	BLASTING UNIT #1	4	G	WHEELABRATOR KEY KEY	112 AC-50 T-6A	STEEL GRIT RECOVERY ABRASIVE SEPARATOR 2-BLAST UNITS 4-TON CAP. EA WITH 8 NOZZLES PER UNIT
3	656	BLASTING UNIT #2	4	G	WHEELABRATOR KEY KEY	112 AC-50 T-6A	STEEL GRIT RECOVERY ABRASIVE SEPARATOR 2-BLAST UNITS 4-TON CAP. EA WITH 8 NOZZLES PER UNIT
4	22	WHEELABRATOR	15	F	WHEELABRATOR	1260	STORES UP TO 1 TON OF STEEL GRIT, HANDLES SMALL PARTS UP TO 1 TON,
5	653	KLEEN BLAST STORAGE	5	P	MASSCO.	N/A	4-100 TON STORAGE HOPPERS BUCKET ELEVATOR WITH TRAVEL CONVEYOR 12" W-20" L 50 TONS/HOUR FILL RATE
6	N/A	SLING TUBS	6	G	MASSCO	N/A	24 TUBS USED FOR STORAGE & TRANSPORTATION OF KLEEN BLAST CAP. RANGES FROM 300 TO 675 TONS PER TUB. TOTAL TUB CAP. IS 156 TONS
7	N/A	PORTABLE POTS	6	G	CLEMENT/KECO	N/A	600 LB CAP. TOTAL OF 59 POTS WHICH 10 ARE IN SETS OF 2 WITH A COMMON HOPPER
8	N/A	SPIN BLASTER	5	P	N/A	N/A	411-2 USED FOR INSIDE PIPE

BY: J. R. RUECKER
F. & I. E. DEPT.

ABRASIVE BLAST DEPT.

JUNE 1979

JMR



EQUIPMENT - PAINT DEPT.

REF. NO.	DESCRIPTION	MFG	QTY	CAPACITY
1	PAINT PUMP	GRACO	4	MODEL - KING MAX. 3000 PSI AIRLESS APPLICATION USED FOR LARGE AREAS
2	PAINT PUMP	GRACO	4	MODEL - BULL DOG MAX. 3000 PSI AIRLESS APPLICATION USED FOR LARGE AREAS
3	PAINT PUMP	GRACO	3	MODEL - PRESIDENT MAX. 900 PSI AIRLESS APPLICATION USED FOR LARGE AREAS
4	PAINT PUMP	SPEE FLO	1	MAX. 1200 PSI AIRLESS APPLICATION USED FOR LARGE AREAS
5	PAINT PUMP	GRACO	1	MODEL - PRESIDENT EMREL MAX. 900 PSI AIRLESS APPLICATION USED FOR LARGE AREAS
6	PAINT PUMP	GRACO	1	MODEL - 350 MAX. 3000 PSI USED FOR SMALL AREAS
7	PRESSURE POT	DEVILBISS	N/A	5 GALLON POT AGITATOR USED FOR HEAVY COATINGS
8	PRESSURE POT	BINKS	N/A	5 GALLON POT AGITATOR USED FOR HEAVY COATINGS
9	PRESSURE POT	DEVILBISS	N/A	5 GALLON USED FOR ALL TYPES OF COATINGS
10	PRESSURE POT	BINKS	N/A	5 GALLON USED FOR ALL TYPES OF COATINGS
11	PRESSURE POT	DEVILBISS	N/A	10 GALLON USED FOR ALL TYPES OF COATINGS

JUNE 1979

REF. NO.	DESCRIPTION	MFG	QTY	CAPACITY
12	PRESSURE POT	BINKS	N/A	10 GALLON USED FOR ALL TYPES OF COATINGS
13	PRESSURE POT	DEVILBISS	N/A	2 GALLON USED FOR ALL TYPES OF COATINGS AND SMALL JOBS + TOUCH UP JOBS
14	PRESSURE POT	DEVILBISS	N/A	2 QUART USED FOR ALL TYPES OF COATINGS AND TOUCH UP JOBS
15	PAINT CUP	DEVILBISS	N/A	1 QUART USED FOR LACQUER TYPE COATINGS
16	SPRAY GUN	GRACO	N/A	TYPE - AIRLESS SIMONARD PRODUCTION GUN
17	SPRAY GUN	GRACO	N/A	TYPE - AIRLESS AIR GUN C-1010 REACH
18	SPRAY GUN	GRACO	N/A	TYPE - CONVENTIONAL PRODUCTION AIR GUN
19	SPRAY GUN	DEVILBISS	N/A	TYPE - CONVENTIONAL PRODUCTION AIR GUN
20	SPRAY GUN	DEVILBISS	2	TYPE - I D TYPE PAINTER MIN. DIA 8" 360° NOZZLE
21	PAINT MIXER	ARO	N/A	FOR 55 GALLON DRUMS + 5 GALS AIR MOTOR 1500 TO 2800 RPM
22	CLEANER	WATSY	1	HIGH PRESSURE CLEANER 1000 PSI MODEL 4000

BY: J.R. RUECKER
F & E. DREY

EQUIPMENT- RIGGING LOFT

AUG 1980

REF NO	NASSCO NO	DESCRIPTION	AGE	COND	MFG.	MODEL	CAPACITY
1	1761	GRINDER	15	G	STANLEY	PEDESTAL	2 WHEELS USED FOR AXES
2	10601	CUT OFF SAW		G	WALLACE	1710	10" DIA ABRASIVE BLADE 1" THK CUT MAX
3	67	SWINGE	3	G	NATIONAL	1052	1000 TON
4	401	DRILL PRESS	20	G	BUFFALO	16	8 THROAT, 15" HEIGHT CLEARANCE, MURSE TAPER SPINDLE
5	1762	GRINDER	10	F	DAYTON	PEDESTAL	1- WHEEL USED FOR PRODUCTION
6	379	LEAD POT	20	G	KNAPP	N/A	10" DIA. T.D. 1" DEEP
7	402	WINDER	15	F	N/A	N/A	N/A
8	10703	RE-RECLER.	15	F	N/A	N/A	UP TO 8'
9	2301	DYNAMOMETER			DILLON	N/A	100,000 LBS
10	2302	DYNAMOMETER	12	G	DILLON	N/A	20,000 LBS
11	2303	DYNAMOMETER	12	G	DILLON	N/A	20,000 LBS
12	10706	DYNAMOMETER			DILLON	N/A	20,000 LBS
13		DYNAMOMETER	12	G	DILLON	N/A	50,000 LBS
14		DYNAMOMETER	12	G	DILLON	N/A	50,000 LBS

BY: J R RUECKER
FILE DEPT

EQUIPMENT - YARD MISC.

MAY, 1984

REF NO.	ARESCO NO.	DESCRIPTION	MFG	MODEL	CAPACITY	AGE	DEPT
1	851	CONVEYOR SYSTEM INCLUDES: 2-CHUCKER CARS 3-TRANSFER CARS 2-TURNIDLES 10-ROLLER CONVEYORS	N/A	N/A	MAX. PLATE WEIGHT 10 TONS MAX. PLATE SIZE 10'X30' AND 10'X4' MANUAL MODE PLATE THICKNESS 1/4" - 1 5/16" MAX. SHAPE LENGTH 30' MIN. SHAPE LENGTH 10' MAX. SHAPE WEIGHT 3 TONS TRANSPORT SPEED UP TO 100' / MIN.	10	G
2	531	PANEL LINE 4 STATIONS: 1-THICK WELD 2-FIRST SIDE WELD 3-TURN OVER SECOND SIDE WELD 4-LAYOUT	ESAB	N/A	MAX. PANEL SIZE 10' X 65' MAX. THK. 1 1/4" MIN. THK. 5/16" MAX. WEIGHT 66 TONS	5	G
3	558	WHEELABRATOR INCLUDES: WHEEL ABRAITOR BUSH OFF PAINT BOOTH	WHEELABRATOR	N/A	MAX. PLATE WIDTH 10' AVERAGE SPEED OF 10 LINEAL FEET / MIN. PAINT BOOTH HAS OVER & UNDER SPRAY NOZZLES	18	G
11	535	TIG WELDER	N/A OK DEPT	N/A	MAX. LENGTH 42' MAX. WEB WIDTH 30"	11	G
5	N/A	FRAME BENDER	HYDE	N/A	COMPUTER NUMERICAL CONTROL MAX. BEAM SIZE: 25" DEEP ANGLE WITH 1/2 MAX. WEB 8" FLANGE WITH 1" WEB MIN. BENDING RADIUS: 25" DEEP SECTION - 10' 8" DEEP SECTION - 7'	1	E

BY: J.R. ROECKER
I & E DEPT.

REFERENCE A.

KEY HISTORY DATES

REFERENCES

- A. HISTORY KEY DATES
- B. DRAFTS For VARIOUS SHIP CLASSES
- C. EQUIVALENT SHIP RATIO'S
- D. PLATE YARD STUDY
- E. PIPE FOOTAGES - PAST & CURRENT NASSCO CONTRACTS

HISTORY KEY DATES

	HULL	WAYS	TYPE VESSEL	START OF CONSTRUCTION	KEEL	LAUNCH	DELIVERY
ESNO	361	2	LST	06-02-67(A)	12-16-67(A)	09-28-68(A)	11-06-69(A)
ILIA	362	3	LST	01-22-68(A)	02-22-68(A)	11-23-68(A)	01-19-70(A)
DERICK	363	1	LST	02-19-68(A)	04-13-68(A)	03-08-69(A)	03-11-70(A)
ENECTADY	364	4	LST	05-20-68(A)	08-02-68(A)	05-24-69(A)	05-05-70(A)
UGA	365	2	LST	07-15-68(A)	09-28-68(A)	07-12-69(A)	06-30-70(A)
SCALOOSA	366	3	LST	09-13-68(A)	11-23-68(A)	09-06-69(A)	09-11-70(A)
FINAW	367	4	LST	02-03-69(A)	05-24-69(A)	02-07-70(A)	01-08-71(A)
BERNARDINO	368	2	LST	06-02-69(A)	07-12-69(A)	03-23-70(A)	02-19-71(A)
ELDER	369	3	LST	07-28-69(A)	09-06-69(A)	05-22-70(A)	04-22-71(A)
INE	370	1	LST	09-08-69(A)	12-13-69(A)	08-15-70(A)	06-17-71(A)
ARTANBURG COUNTY	371	4	LST	11-17-69(A)	02-07-70(A)	11-07-70(A)	08-12-71(A)
RFAX COUNTY	372	2	LST	01-30-70(A)	03-28-70(A)	12-19-70(A)	10-07-71(A)
MOURE COUNTY	373	3	LST	03-06-70(A)	05-22-70(A)	02-13-71(A)	12-09-71(A)
BOUR COUNTY	374	1	LST	05-11-70(A)	08-15-70(A)	05-15-71(A)	02-03-72(A)
LAN COUNTY	375	4	LST	08-03-70(A)	11-07-70(A)	07-24-71(A)	03-30-72(A)
INSTABLE COUNTY	376	2	LST	09-08-70(A)	12-19-70(A)	10-02-71(A)	05-18-72(A)
ISTOL COUNTY	377	3	LST	12-14-70(A)	02-13-71(A)	12-04-71(A)	07-27-72(A)
VCSE	387	1	AFS-7	11-22-68(A)	03-08-69(A)	12-13-69(A)	09-30-70(A)
WOOD COUNTY	360	1	BARGE	06-24-71(A)	07-01-71(A)	01-15-72(A)	04-04-72(A)
TRAMAR (ARIES)	382	4	OBO	11-24-71(A)	04-28-72(A)	02-17-73(A)	08-08-73(A)
TRASEA (ARIES)	383	4	OBO	11-06-72(A)	02-17-73(A)	10-20-73(A)	03-19-74(A)
RONADO (MARGATE)	384	2	CT	09-07-72(A)	10-27-72(A)	06-30-73(A)	12-28-73(A)
ERRY VALLEY (MARG)	385	2	CT	04-19-73(A)	06-30-73(A)	03-09-74(A)	07-10-74(A)
ELSEA (MARGATE)	386	2	CT	12-10-73(A)	03-09-74(A)	10-19-74(A)	02-23-75(A)
EDEN DOLPHIN (AER)	390	3	SCT	03-28-73(A)	05-22-73(A)	01-19-74(A)	10-10-74(A)
EDEN ENDEAVOR	391	4	SCT	08-13-73(A)	10-23-73(A)	06-15-74(A)	12-12-74(A)
EDEN MONARCH	392	4	SCT	04-01-74(A)	06-15-74(A)	02-01-75(A)	06-25-75(A)
ROANOKE (USN)	393	3	AGR-7	10-06-73(A)	01-19-74(A)	12-07-74(A)	10-14-76(A)
RTE	394	3	SCT	09-09-74(A)	12-07-74(A)	07-19-75(A)	02-19-76(A)
VER STATE	395	4	SCT	10-21-74(A)	02-01-75(A)	10-11-75(A)	04-14-76(A)
SE CITY	396	3D	SCT	03-31-75(A)	05-05-75(A)	02-12-76(A)	07-23-76(A)
ERICAN HERITAGE	397	3	SCT	05-27-75(A)	07-19-75(A)	04-10-76(A)	11-01-76(A)
ERSEAS CHICAGO	398	3	SCT	03-08-76(A)	04-15-76(A)	11-16-76(A)	06-30-77(A)
ERSEAS OHIO	399	4	SCT	04-26-76(A)	06-30-76(A)	01-26-77(A)	10-20-77(A)
ERSEAS NEW YORK	400	3	SCT	09-03-76(A)	11-22-76(A)	06-22-77(A)	12-08-77(A)
ERSEAS WASHINGTON	401	4	SCT	11-29-76(A)	02-02-77(A)	08-31-77(A)	03-15-78(A)
RMACSTAR	402	2	CT	07-29-74(A)	10-23-74(A)	05-31-75(A)	12-10-75(A)
RMACSUN	403	2	CT	04-21-75(A)	05-31-75(A)	01-17-76(A)	06-23-76(A)
RMACSKY	404	2	CT	11-10-75(A)	01-17-76(A)	08-21-76(A)	02-01-77(A)
ESTNUT HILL	388	4	SCT	07-07-75(A)	10-15-75(A)	06-22-76(A)	12-01-76(A)
TTANNING	389	3D	SCT	12-02-75(A)	02-20-76(A)	09-17-76(A)	03-01-77(A)
T. ALASKA	405	3D	SDT	07-26-76(A)	09-21-76(A)	07-21-77(A)	03-14-78(A)
T. SAN DIEGO	406	3D	SDT	05-09-77(A)	07-25-77(A)	05-06-78(A)	10-25-78(A)
CO ALASKA	408	3D	SDT	01-03-78(A)	05-09-78(A)	02-24-79(A)	12-04-79(A)
CO CALIFORNIA	409	3D	SDT	11-36-78(A)	02-28-79(A)	01-05-80(A)	07-15-80(A)
LOWSTONE (USN)	411	2	AD-41	01-10-77(A)	06-27-77(A)	01-27-79(A)	05-31-80(A)
ADIA (USN)	412	3	AD-42	07-10-77(A)	02-14-78(A)	07-28-79(A)	03-03-81
E COD (USN)	413	2	AD-43	05-01-78(A)	01-27-79(A)	08-02-80(A)	10-30-81
(USN)	414						

AFS Combat Store Ship
LST Landing Ship Tank
OBO Ore Bulk Oil Carrier
CT Coronado Class Tanker
SCT San Clemente Class Tanker
SDT San Diego Class Tanker

NOTE: Revised to agree with Key Dates from Serial No. 30-2

Prepared By: A.J. Nadeau

* UNNAMED SHIPS

HISTORY KEY DATES

	HULL	WAYS	TYPE VESSEL	START OF CONSTRUCTION	KEEL	LAUNCH	DELIVERY
*	414	2	AD-44	08-03-79(A)	08-02-80 (A)	12-19-81	02-15-83
<u>BLUE RIDGE</u>	<u>415</u>	BD	CPC	11-01-79(A)	03-03-80 (A)	11-01-80	04-09-81
<u>COAST RANGE</u>	<u>416</u>	3	CPC	02-18-80(A)	06-02-80 (A)	12-20-80	05-23-81
<u>SIERRA MADRE</u>	<u>417</u>	4	CPC	06-05-80(A)	09-02-80	03-28-81	08-27-81
*	418	3	T-ARC-7	09-15-80	02-16-81	02-13-82	02-15-83
*	419	BD	IPC	11-03-80	03-02-81	10-03-81	03-01-82
*	420	2	IPC	11-30-81	03-29-82	10-30-82	04-01-83
*	424	4	LPC	05-04-81	08-03-81	03-06-82	09-02-82
*	425	BD	LPC	07-20-81	10-19-81	05-22-82	10-26-82
*	426	4	LPC	11-23-81	03-08-82	09-25-82	03-03-83

AD	Destroyer Tender
CPC	Carlsbad Product Carrier
T-ARC-7	Cable Repair Ship
IPC	Ingram Product Carrier
LPC	La Jolla Product Carrier

REFERENCE B.

DRAFTS For VARIOUS

SHIP CLASSES

NATIONAL STEEL AND SHIPBUILDING COMPANY

INTER-DEPARTMENT MEMO 32/GEN/JWR:sus/79-121

Date..... December 19, 1979

L. Bothell

Dept.....

Drafts for Various Ship Classes

Jcs No.....

J. Tucker

Dept.....

Last week, Brad Closson requested launch and delivery drafts for a number of different classes of vessel.

Launch drafts are summarized below based upon actual data (A) from our files and estimated values (E) for others. Vessels built in the dock have launch drafts reflecting the addition of ballast forward to obtain even keel float-off. San Clemente vessels built on the ways had several thousand tons of water ballast aboard aft to control ways loading during launching.

CLASS		FORWARD	AFT
Del Mar (E)	Ways	3'	14'
Coronado (A)	Ways	2'	12'
Monterey Bulker (E)	Ways	3'	15'
San Clemente OBO (A)	Ways	2'	20' ←
San Clemente Tanker (A)	Ways	2'	17'
	Dock	10'	10'
Catalina (E)	Dock	11'	11'
San Diego (A)	Dock	11'	11'
Carlsbad (E)	Ways	5'	14'
	Dock	10'	10'
Ingram (E)	Ways	2'	15'
	Dock	11'	11'
T-ARC-7 (E)	Ways	11'	19'
	Dock	16.5'	16.5'
LST		NO INFORMATION	
AD-41 (A)	Ways	7'	20'*
AOR-7 (A)	Ways	1'	21.5'
AFS		NO INFORMATION	
Mariner		NO INFORMATION	

* Keel draft. Propeller extends 2.5' below keel

In general, it can be anticipated that fine, heavy vessels such as T-ARC-7 and AD's will be poorly suited to construction in the building dock due to limited water over the blocks.

Drafts for tank testing, trials and delivery are not readily defined, but some generalizations are possible.

CONTINUED . . .

Berth 5 is not adequate for any of these functions for any vessel listed except the LST. Berth 2 is adequate for all functions for all vessels. The other berths fall between these two extremes, as follows:

- BERTH 1: Too short for San Clemente, Catalina, and San Diego Classes. Adequate for all functions for all others except AD's, although utility would be improved if high spots along the pierside and next outboard line of soundings were eliminated. This would also permit the AD/s to use the berth for all functions. (NOTE: Safety concerns probably preclude use of this berth for dock trials to protect the dock gate.)
- BERTH 3: Too short for most listed vessels, but ideal for T-ARC-7 and LST, and possibly acceptable for AFS and Mariner, if not blocked off by a vessel at Berth 2. For those vessels short enough to use this position, all functions are practical.
- BERTH 4: Too short for San Clemente, Catalina and San Diego Classes. Adequate for all functions for all others.
- BERTH 6: Too shallow for tank testing, trials and delivery for San Clemente, Catalina and San Diego Classes. Ballasting for trials prior to departure would be restricted for all others except LST. The degree of restriction varies, depending on the drafts at which trials are to be run, but channel depth puts a limit of about 27 feet on draft leaving the yard. Tank testing and ballasting for delivery should be possible at this berth for all vessels except the three biggest classes, mentioned above.

All of the above discussion does not consider questions of services to the ships or the adequacy of mooring fittings. If there are remaining questions on hull related items, feel free to contact me again.

Paul Tucker

P. Tucker
Chief Naval Architect

cc: K. Evans S. Scoggins
J. Lightbody T. Roach
A. Lutter J. Acton
K. Cooley T. Felts
L. Haumschilt J. Goff
J. Royle E. Selich

File

REFERENCE C.

EQUIVALENT SHIP RATIO'S

June, 1981

YARD

EQUIVALENT SHIP RATIO BASED ON

TOTAL MANHOURS MINUS CG 8

<u>NAVY</u>	<u>MANHOURS</u> ⁽¹⁾	<u>EQUIVALENT SHIPS</u>	
LST Learning Curve Av.	901,626	0.64	
AFS	1,256,894	0.90	
AOR	3,053,769	2.18	
AD 41/42	5,536,017	3.96	
T-ARC	2,092,701 ⁽²⁾	1.50	
 <u>COMMERCIAL</u>			
OBO	1,342,571	.96	
CT	1,013,476	.72	
SCT	1,399,296	1.00	BASE
SDT	2,453,425	1.75	
CPC	1,699,569 ⁽³⁾	1.21	
IPC	1,144,883 ⁽⁴⁾	.82	
LPC	1,115,290 ⁽⁵⁾	.80	

(1) From weekly budget recap report.

(2) Estimate per Al Gillilan.

(3) Trend projection on Hull 416 per Al Gillilan.

(4) Trend projection on Hull 419 per Al Gillilan.

(5) Estimate on Hull 424 per Al Gillilan.

EQUIVALENT SHIPS

The concept of equivalent ships has been developed to provide a common indicator for projecting past production trends into the future, the predicting future facilities requirements. The equivalent ship has been developed on the following:

1. Total new construction direct labor hours (cost groups 1-9 minus 8 engineering) by type vessel.
2. San Clemente Class Tanker (SCT) used as base for equivalent ship indicator.
3. Total new construction direct labor hours per type vessel divided by SCT hours equals equivalent ship indicator for that type of vessel.

EXAMPLE:

<u>TYPE VESSEL</u>	<u>MANHOURS</u> <u>(CG 1-9 Minus 8)</u>	<u>EQUIVALENT</u> <u>SHIPS</u>	
SCT	1,399,296	1.00	Base
CT	1,013,476	.72	
SDT	2,453,425	1.75	
AOR	3,053,769	2.13	
AD	5,536,017	3.96	

REFERENCE D.

PLATE YARD STUDY

REPORT ON THE STEEL PLATE YARD

Presented by: B. T. McAlester

Tidman Industrial Engineering Services

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I would like to thank the many members of NASSCO staff who provided information and assistance in compiling this report.

Trevor McAlester

SUMMARY

The steel plate yard operates under the most severe restrictions, because of a system of estimating that ignores reality. The quality and consistancy of information used by individuals and departments is very inadequate. In the investigation, comments like, "The people in the yard should work harder" shows a lack of understanding or the manufacturing function. Other ideas of how to solve the impending problem range from extending the yard, a new crane, of outside warehousing. Seven options are given consideration in differing levels of depth, and included are all those which were given as ideas by people who were consulted.

Only one stands out as the obvious choice, and only one meets the needs of the shipyard. Reduce the number of plate sizes to a manageable number. It will save money, it will work.

INVESTIGATION BRIEF

What is happening now in the steel yard with respect to its ability to service the shipyard with plate?

How much more plate can the system handle?

What changes to the steel yard and handling systems will be required to meet the needs of the shipyard in the future?

INDRODUCTION

The material handling system in use at the steel yard encompasses the following equipment:

1 tracked crane, 15 ton capacity, Crane No. 507.

Various railcars supplying incoming steel to the yard.

These are the items used in the direct locality of the yard, but other pieces of equipment are used directly down the yard. Balanced capacity is very important to the successful operation of a materials handling system. An evaluation of the wheelabrator and collacator capacity is given in this report.

CURRENT SITUATION

The steel stock yard is supplied by railcar with steel based on the requirements of the building program and, where applicable, economic purchasing. The crane is required to unload these plates and locate them at different parts of the storage area. This work is done one plate at a time. The crane services the wheelabrator to provide the shipyard with its basic raw material-this also is done one plate at a time.

*There are at present approximately 2400 different plates by size, thickness and grade.

There are 270 different location sites in the stock yard at present.

127 are piles with the same plate all the way through the pile.

143 are mixed piles where some or all the plates may be different.

*Based on analysis of listing of Master File-Steel Requirements. 08/17/80.

In evaluating the capacity of the crane in the steel yard certain basic information has been gathered. As follows :

The crane travels at 6.25 feet per second
Pick-up time 12.00 pieces per second
Lower and release 15.00 pieces per second
Length of craneway 535.00 feet end to end

OPERATIONAL SEQUENCE

1. Travel to plate
2. Pick-Up (lowering and transverse travel occurs during travel) .
3. Travel to drop.
4. Release (lowering occurs during travel).

The average time taken to process a plate is equivalent to travelling half way down the track, pick up, travel half way back up the track, lower and release.

The total average sequence time is:

112.6 seconds or

1.88 minutes.

There is a lifting ratio of simple lifts from solid piles to complex lifts from mixed piles. Work records show that this ratio is running at

25% lifts from solid piles.

75% lifts from mixed piles.

Total Hours per Weekday	22.50	
Total Hours on Saturday	15.50	
* Therefore, total available hours	677	
Hours lost to down time	97.50	<u>14.40%</u>
Actual available hours	579.50	
Less 10% allowances	521.55	Net Hours
Total lifts	44,329	
Number per hour	85	
Total staged	1,183	
Total to wheelabrator	1,822	
Time to Stage or to wheelabrator	1.88	Minutes
Total time required	5,649.4	Minutes
	94.15	Hours

THE EFFECTIVE LIFTING ** 13.90% OF TOTAL AVAILABLE HOURS

The average time taken for a non-productive lift is:

$$\frac{(\text{Total Lifts} - \text{Productive Lifts})}{(\text{Total Net Hours} - \text{Time Required for Productive Lifts})}.$$

$$\begin{aligned} \frac{(44329 - 3005)}{(521.55 - 94.15)} &= \text{Lifts per hour} \\ &= 96.68 \\ &= .62 \text{ Minutes per lift.} \end{aligned}$$

Reference period data from crane records 7-17-80 - 8-26-80.

Includes down time on wheelabrator and collacator as these affect the crane.

**Effective lifting is where a plate is moved to the wheelabrator as opposed to moved aside to another stack.

CURRENT OUTPUT

Based on the tonnage and the number of plates in the yard at 08-24-80.

23184.5 tons

10354 plates

The average weight of each plate is:

2.239 tons

The work records show that 1,822 plates were placed at the wheelabrator during a 28 day period.

Average weekly tonnage:

65.07 plates x 5 days x 2.239 tons

728.47 tons/week.

The greatest number of plates moved to the wheelabrator during the reference period was 130.

If this output could be sustained, average weekly tonnage:

130 plates x 5 days x 2.239 tons

1,455.35 tons/week

NOTE : The actual number placed at the wheelabrator during the week when 130 were placed in one day was 347 an average of 69.4.

CURRENT SITUATION

CONCLUSIONS

It is evident from the information available that the crane is working at a very effective level of performance.

The only significant opportunity to improve the operating effectiveness of the crane would be by reducing the level of down time to about 4%.

If this were possible the improvement in good lifts would only be:

Total Available Hours	677
*Hours Lost to down time	29.78

Actual available hours	647.21
Less 10% allowances	582.49

At 85 lifts per hour	
Total lifts	49,512

Effective lifting

@ 18.05% of net

available hours	105.13 Hours
-----------------	--------------

3,355	Lifts
-------	-------

Current Lifting activity	3,005	Lifts
--------------------------	-------	-------

IF down time can be

reduced to 4% new

lifting capacity	3,355	= 11.6% Increase.
------------------	-------	-------------------

*Down time hours calculated on a reduction of 10% from 14.4% to 4.4% and the 14.4% is a total figure from the crane, wheelabrator and collacator.

NOTE : These values are based on a tonnage in the steel yard of approximately 23,000.

OPTIONS AVAILABLE TO INCREASE CAPACITY OF PLATE YARD

These appears to be several ways in which the company could go in order to increase its capacity in the plate yard.

Among these that could be considered are:

- (I) Increase the size of the plate yard.
- (II) Buy another crane.
- (III) Do both (I) and (II) above.
- (IV) Vertical stacking of plates.
- (v) Lease or buy outside storage capacity.
- (VI) Schedule plates far enough in future to "kit each days production etc.
- (VII) Standardize plates bought by company.

OPTION ONE

Increase size of plate yard.

The general ~~shortage~~ *shortage* of available real estate limits the amount by which the yard can be increased.

Additionally, the current location of the railway tracks reduces the utilization of the available space.

In the *drawing* a general consideration is given to the kind of change that might be incurred if the yard were extended. It is difficult to be precise and the net change in effect is small.

This change in available space increases the number of stacks from the current 270 to 434.

The current 270 are split as follows:

127 solid 47%

143 mixed 53%.

The greatest benefit that can be accrued to the crane can be achieved by using all the *increase in stacks* for mixed stacks. This would increase the number of mixed stacks by

164 or by

11.5 % .

This increase will be diminished somewhat by the extra distance required to get the plates. *

The current lifting ratio of non-productive lifts to productive lifts is 7.19/1.

If the yard area for mixed stacks is increased by 115%. Then the Lifting ratio will change to 3.34:1. As the larger number of mixed stacks will allow fewer mixed plates in each stack.

The time for a productive lift will increase by the additional amount of time required to travel. At 6.25/see. over the longer distance (855' - 535') - 6.25 = 51.2 secs.

The time for a productive lift in the new yard would be: 112.8 + 51.2 = 2.73.

This represents an increase of 54.3%.

Therefore, the new lifting ratio would be = 4.85/1. =

This represents a 32.5% increase in output from the crane.

A 32.5% increase in output would represent the following:

Total staged 1,567

Total to wheelabrator 2,414

This increase in output by the crane is based on tonnage in the yard of 23,000 and this equated to 10,354 individual plates.

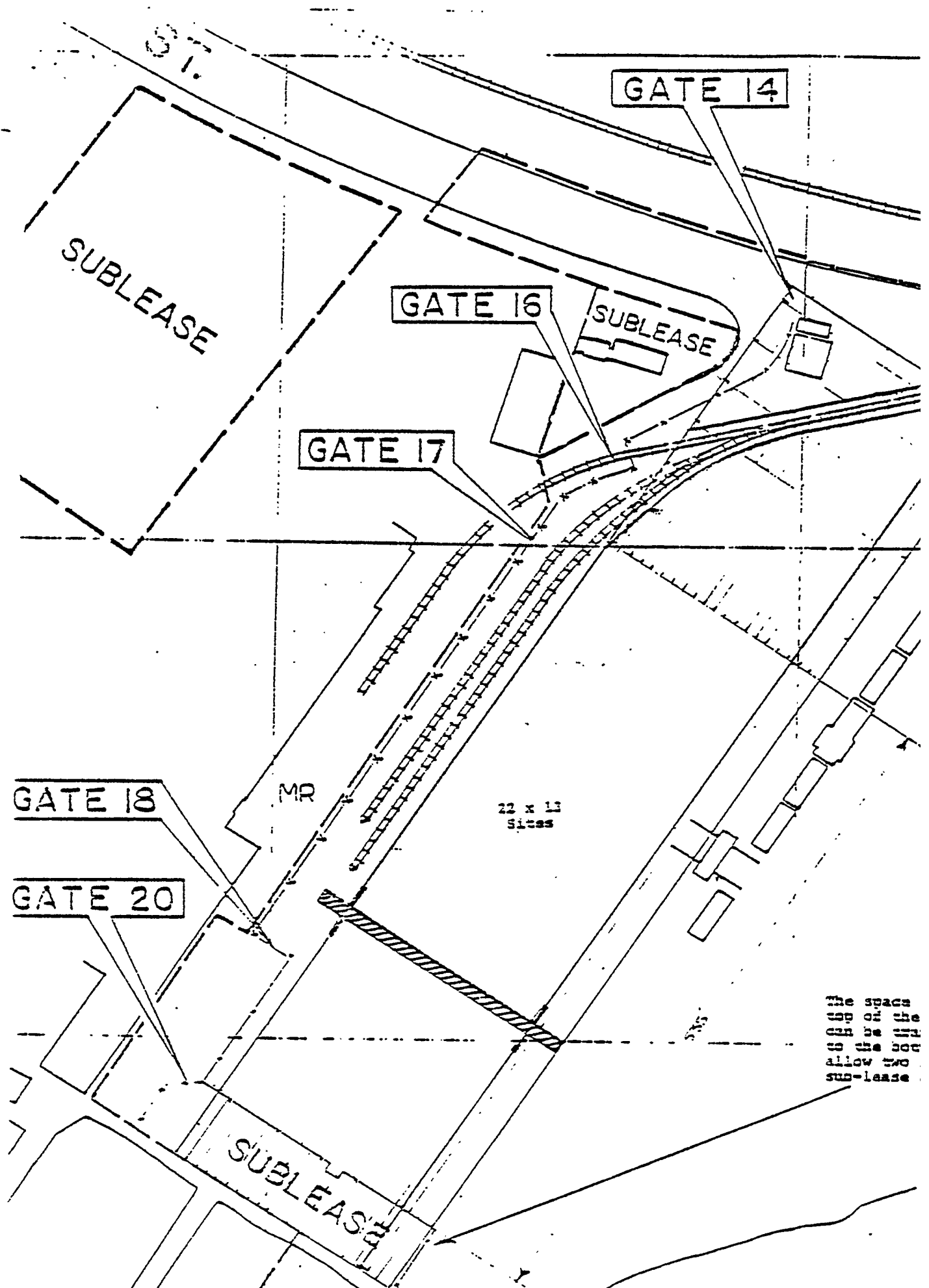
If the tonnage rises to 34,500 then the lifting ratio changes from: 4.85:1 to 7.275:1.

This means that in spite of increasing the vard size by 60% the capacity of the crane goes down by 1.18% on its current performance.

If the tonnage rises to 46,000 then the lifting ratio changes from: 4.85:1 to 9.70:1

This would result in a reduction in crane capacity of: 34.9% on its current capacity.

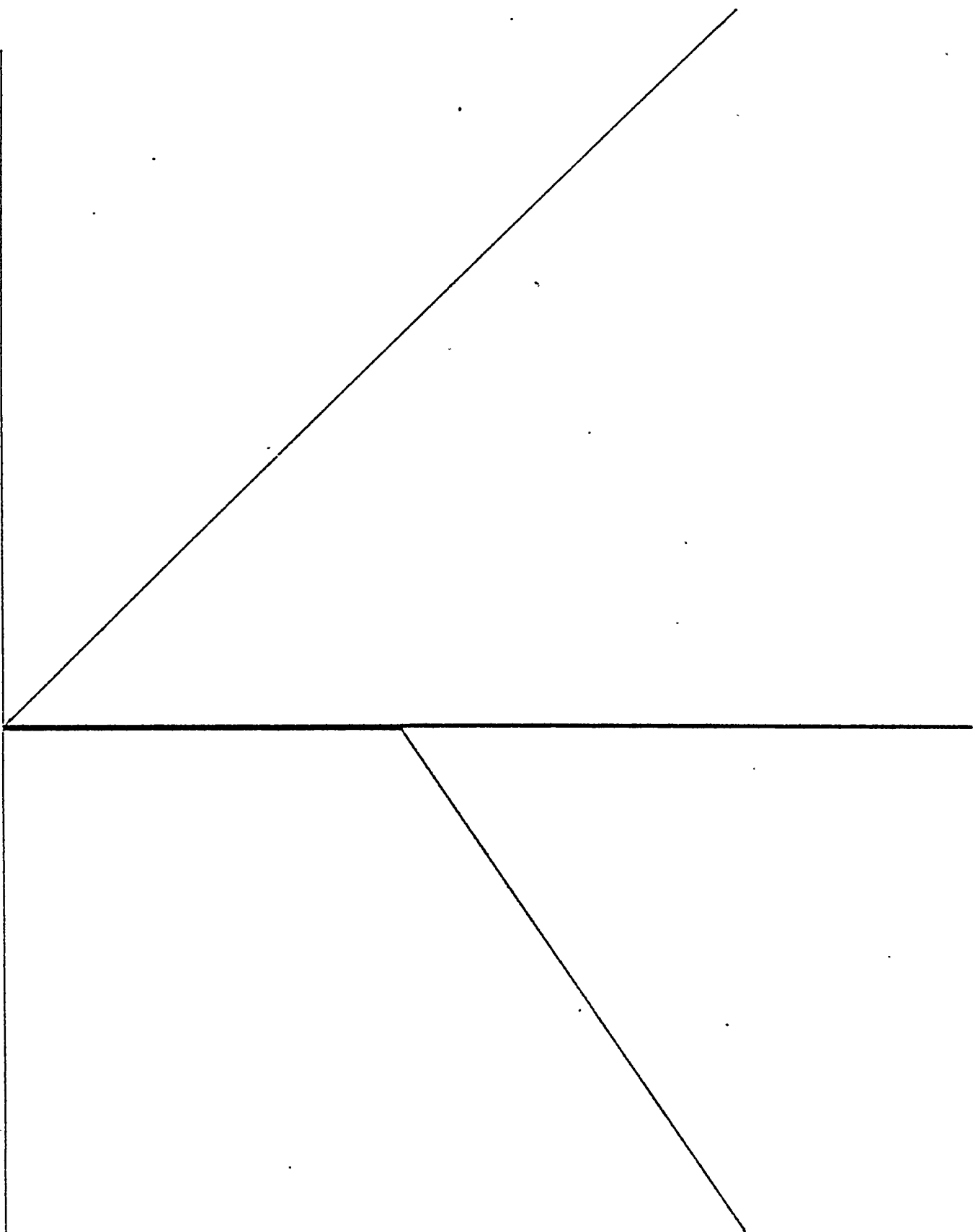
*Plates are randomly stacked in the yard.



The space
top of the
can be used
to the bottom
allow two
sub-lease

HOZMAG HZMAG

UZHMA HZMAG



CONCLUSIONS

The increase in the size of the yard by 60% *produces* only a 32.5% increase in capacity.

Taking into account the limited amount of real estate this represents a very expensive option.

It would require significant expenditures to achieve and eliminate the use of the roadway at Gate 14.

Apart from the **liizited increase in** capacity that is made **available** by this particular option, it is vital that it is understood that *this* increase is *only* valid if the stock level. remains *at around* 25,000 tons. As stock levels rise crane capacity declines.

The whole policy of economic ordering ahead of time is done without any realization that it inhibits manufacturing. The extreme case would be where steel was given to the company at no charge and stock piled to such an extent that no ships could be built.

RECOMMENDATION

OPTION ONE

In view of the very limited advantages **that are made** available in option One and its general lack of viability it should not be considered.

OPTION TWO

Buy another **crane**; retain current size of yard.

Using the same reference period data theoretically, it would be possible to double the output of the yard to:

88658 lifts

2366 staged

3644 to wheelabrator

Because interference will occur between the two cranes the actual increase in output will be reduced by an amount due to interference. If the number of plates lifted to the wheelabrator rises then the level of interference will rise.

If a second take-off **station were** provided for the wheelabrator this interference would be **eliminated**.

COST OF NEW CRANE

The projected test of a new crane would be approximately
\$2,000,000.

OPTION Two BUY NEW CRANE

CONCLUSIONS

The addition of a new crane will offer a **very low** increase in output from the **yard** at a very high cost. There is an extended period of time prior to delivery. There would be a technical requirement to split the yard into two sections for purposes of production planning and control. The precision with which this planning needs to be done is of a very high order. Failure to maintain this **planning quality** would reduce even farther the output of the yard.

RECOMMENDATION

OPTION TWO

With the low increase in output and the very high cast involved, this option is even less viable than Option One.

OPTION THREE

Increase size of yard.

Add new crane.

By combining the increases gained in Option One and Option Two. i.e.

32.50% Increase generated by increasing the size of the yard
100.00% Increase as a result of purchase a crane.*

The addition of a second crane **would reduce the time** required to take a plate to the wheelabrator as the average distance travelled to obtain a plate would be reduced from 855' to 428'. This reduces the lift time from 2.73 minutes to 1.59 minutes.

This represents a reduction of 42% of the time spent on productive lifts.

The current amount of time spent on productive lifts is ~~13.90% of the net available hours~~. If only 58% of this time is used because of a shorter distance travelled, then 5.8% of the net available hours is exposed for lifting. The actual percent of time spent on productive lifting as a result of the use of two cranes will be 14.70%. This means that the theoretical increase in output resulting from the second crane would be 106%. However, interference would reduce this to about 100%. predicted output generated by Option Three with current tonnage in yard.

Option One:	Total staged	1,567
	Total to wheelabrator	2,414
Option Two:	100% increase	3,134
		4,828

RECOMMENDATION

OPTION THREE

The very high costs associated with this option make it unattractive and it cannot be recommended.

OPTION FOUR

Vertical stacking.

The use of vertical stacking in the yard will require a change in handling technique from the present magnetic lifting device to a mechanical lifting device. (See illustration,)

If the current number of different plates is maintained **(2,400)**, it will require as an optimum **2,400** discrete sites for these plates. With the current yard at 535'' long it would be possible to have 13 sites down the yard each capable of holding a 40' plate. In order to accommodate 2,400 different size/thickness/width combinations it would **require 185**. locations in each of the 13 sites. Within the yard layout at present each of these locations could only be as wide.

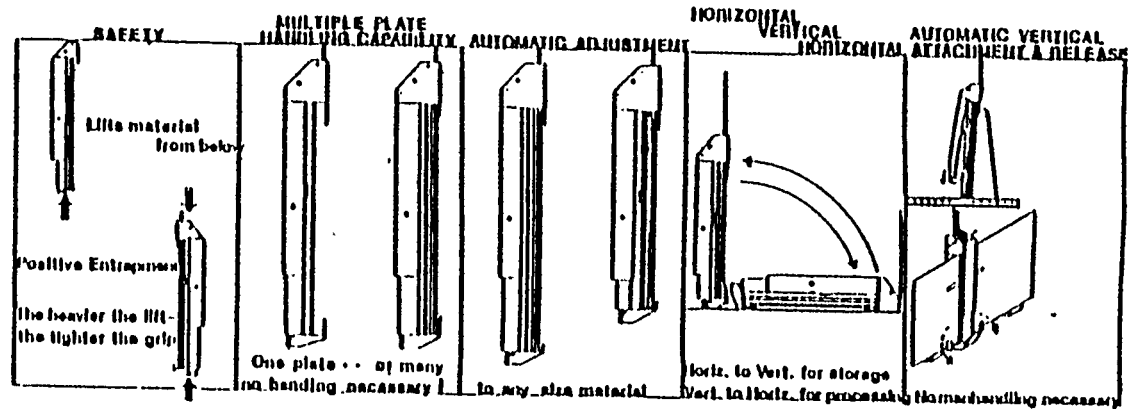
If the yard is extended as shown in option one then it would be possible to have 21 sites down the yard and would require 114 locations in each of the 21 sites. This would mean that each location would be 1.67' wide. With vertical stacking it will be necessary to change the plane of each plate several times in order to process the plates to the wheelabrator. They will probably increase the hazard associated with handling plates. With vertical stacking it would be necessary to have a rigger working with the crane operator. Where there is more than one plate located at one site there would be additional handling required to isolate a plate for lifting

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VERTI-PLATE LIFTER

An under-the-hook device for handling flat stock IN and OUT of vertical storage

FEATURES INCLUDE:



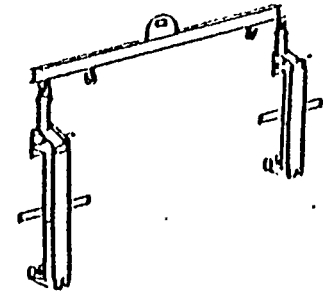
2 1/2 TON LIVE LOAD CAPACITY

FOR 5 TON LIFTS - WE OFFER A TWO LIFTER/LOAD BEAM ASSEMBLY

AVAILABLE MODELS

Width Range of Material to be Lifted	Model Number	Capacity	"A" Dimension	"B" Dimension	Unit Wt.
24" to 48"	44-2848	5000 lbs	4"	78"	100 lbs
24" to 60"	44-3860	5000 lbs	4"	80"	100 lbs
60" to 84"	44-5084	5000 lbs	4"	128"	110 lbs
84" to 108"	44-6108	5000 lbs	4"	128"	120 lbs

For plate over 108" in width, custom lifts are available



Dean Research Corporation
6100 Northwest Ave.
Kansas City, Missouri 64123
(816) 591-7500

STOCKMASTER	
DATE	4-23-68
TIME	10:10
BY	443048

OPTION FOUR

Vertical stacking.

RECOMMENDATION

There are significant costs associated with the introduction of vertical stacking and the benefits are more limited than at first apparent.

It is not a recommended option.

OPTION FIVE

Obtain outside warehousing to hold steel.

In order to meet the requirements of the yard and retain total Flexibility on **plate** selection. The use of outside warehousing is a very obvious option.

There would be a distinct advantage in this approach as it would allow the shipyard plate area to be reduced and this may have considerable benefits to the requirements of the yard.

The disadvantages associated with the use of an outside warehouse **can** be identified as follows; cost, and control.

The cost of land in the area is approximately \$0.25/square foot and to obtain a plot of similar size to the steelyard would cost \$30,000 Leasing would cost between \$5,000 and \$20,000 per annum. A crane would need to be purchased and a system of hauling the steel to the shipyard would have to be obtained, possibly leased or bought low-loaders.

The additional labor and administration would add to the **cost** and create a new requirement in production planning and control. This is already causing the crane excessive unproductive work. The opportunity **for confusion** and error with two plate yards are considerable.

OPTION FIVE

Obtain outside *warehouse*.

RECOMMENDATION

High *costs*, additional administration and labor-
essentially it complicates, cannot be recommended.

OPTION SIX

Kit-out yard by days of work.

The yard at present caters for 270 sites for the steel.

In theory it *is* possible to **allocate** a days work to **each** site only if each days work is organized in **the** order in which it is required will it be possible to benefit from this re-organization.*

to achieve this will require a high order of production planning and control.

As a system it could affect or complicate economic ordering ahead of schedule.

The biggest advantage that this option provides is a retention of flexibility, and no costs involved in implementation.

*At present 9-19-80 the panel line is approximately 1,500 tons ahead of sub-assembly and this is not a strict requirement.

OPTION SIX

Kit-out *yard* by days of work.

RECOMMENDATION

The difficulties of organization make this option insufficiently attractive to recommend.

OPTION SEVEN

Standardization of plates available in plate yard.

(Reducing the number of plate sizes to a manageable number.)

The concept of standardizing the plates in the plate yard is perhaps the most difficult to come to terms with:

With the current quality of information available it is also extremely difficult to prove that it is worthwhile, it is much easier to raise "red-herrings" as to why standardization will not work. In order to try to determine whether or not standardization is the best option, consideration must be given to many factors.

(I) *cost*

(11) Shipyard Operations

(III) Design

(**IV**) Production Planning Control

(v) Purchasing

(VI) *Steel Control*

(VII) Estimating

(VIII) Long Range Planning

COST

In determining whether or *not it will cost more money to* Standardize, it is necessary to consider what happens to plate in the shipyard now. The essential element in extra **cost is what** additional material will be scrapped as a result of standardization-me answer is no more material will be scrapped At present material that is a remnant is used by the Plate Shop for fittings and other requirements. Estimating use a 14% allowance for scrap. The definition of scrap is: The difference between the total material purchased minus the total material used less any destroyed by processing. The current Level **at scrap identified** by this definition is 4.71%. With the retention of current policy using remnant there is no reason to have any increase in scrap. In addition to not using **anymore** material there are some significance cost savings to be gained by standardization.

(1) Reduction in utilization of the **crane in** the *steelyard* to one eight hour shift a day. Labor
Cost Saved**

\$69,243.27 p.a

Electricity saved***

27,213.56 p . a

\$96,456.83 p.a.

This sum of money would at current **market** rates **of** \$435 per ton buy 221.73 tons of steel or 5.76% **of the actual** tons across the platen in 1979.

There are additional **savings in** purchasing steel Control and a reduction of waiting time down the **yard.**

* Information supplied by T. Martin.

** Based on \$9.30 per hour plus variable overhead.

***Source Mr. B. Phelps.

SHIPYARD OPERATIONS

Standardization to a prescribed level will allow the shipyard to operate more effectively than **at** present. The 507 crane will be able to, meet the projected demand with only one shift operating. It could lift 1,085 plates in one week on one shift. At present it effectively lifts 325 to the wheelabrator in one week of three shifts and six days, and on average 308 plates from railcars to the yard. These may be considered as effective Lifts and **therefore, the** current effective lifting is 325 + 308 per week in 128 hours.

$$\frac{128}{223 \div 308} = .202 \text{ hours/Lift}$$

Proposed lifting.

$$\frac{40}{1,085} = .036 \text{ hours/lift}$$

This represents an improvement of: 561.11%

The steelyard as at the start of operations in the shipyard and it is essential that it operates as efficiently as possible. If the crane cannot support the yard then when the buffer stores run out the major shipyard operations will cease.

DESIGN

Based on discussions with D. Krumweide responsible for hull design/drafting there are no restraints imposed by the introduction of standardization.*

It is worth noting that considerable flexibility exists already. This flexibility is imposed by the fluctuating supply of steel.

*Standardization would only modify the number of **grades** *in* agreement with **the** design and engineering requirements **of the** ship, as grade **of** material may be a design **or** contractual requirement.

Production planning and control are required at present to obtain specific plates, which imposes the very high work load on the crane. With the introduction of standardization the crane will be able to obtain plates on a much simpler basis. This will be by row and stack number. In each case only the top plate on the stack will be lifted. This elimination of "digging time" will simplify the operation in the steel yard; will make production planning and control simpler in the steel yard.

PURCHASING

The purchasing effort required at present to process the ordering of 2,400 different plate types is considerable. It requires the development of steel pricing and issuing a purchase order for each different **plate**.

On the **Carlsbad** Tanker contract there are over 1,000 different plates. The current practice of buying ahead of schedule to obtain the best price would not be damaged by standardization. In fact, it should be possible to obtain lower prices by virtue of standardization. There are considerable cost benefits in quantity steel purchasing and in *restricting the* size/thickness range and this will be an added benefit. Standardization will make the purchasing activity easier and less expensive to carry out **than** present. For example, attachment on page shows typical pricing sheet.

CODE NO.	82-9974	82-1333	82-9964	82-8508	82-9935	82-
SIZE	33.15#	33.15#	33.15#	35.7#	35.7#	35
	123X466	72X372	16X360	114X466	50X396	73
BASE PRICE	1787	1787	1787	1787	1787	1787
WIDTH-THICKNESS	166	45	55	125	95	1
LENGTH						
ODD GAGE						
SPECIFICATION	80	80	80	80	80	80
CUTTING						
QUANTITY(VARIES)						18
TOTAL COST	2027	1902	1902	1992	1902	1902

CODE NO.						
SIZE						
BASE PRICE						
WIDTH-THICKNESS						
LENGTH						
ODD GAGE						
SPECIFICATION						
CUTTING						
QUANTITY(VARIES)						
TOTAL COST						

CODE NO.						
SIZE						
BASE PRICE						
WIDTH-THICKNESS						
LENGTH						
ODD GAGE						
SPECIFICATION						
CUTTING						
QUANTITY(VARIES)						

STEEL CONTROL

One of the major tasks of steel control is to match plate sizes to engineering drawings of requirements, these would include thickness and grade of steel.

The objective is to ensure the lowest percentage of scrap off each plate-hence, the existence of 2,400 different plate types, at present and essentially an infinite number yet to come.

With the introduction of standardization the work of steel control will be simplified, and would take less time, however nesting of parts onto standard sizes will have to continue.

Estimators are users of information, and as such are as good as the information, available to them.

In the absence of an existing, work measurement program.*
The basis of estimating in NXSSCO appears to be comparative estimating using historical records.

Current Method of Estimating

Materials Pricing

Determine net steel weight.

1. (a) rough *estimate*
 - (b) detail steel take off from contract scantling plans-by ship areal by *steel* rsquirements-i.e. grades, shapes etc.
 - (c) past ship - detailed steel requirements
2. **Determine** scrap % - Net x s. f. = gross.
3. **Price out steel** - Gross tons x \$/cwt.

* This program is being carried out but has more work to do before being able to furnish the necessary information.

LABOR

Determine net steel weight:

Bow

Stern

Midbody

- inner battoMs

- long'l

- trans

- side shell

- upper deck

Superstructure

Apply hours/ton.

The net tonnage is multiplied by a scrap factor. * to determine the gross tonnage required to be bought in order to manufacture the ship. The gross tonnage is the tonnage paid for by the customer and so directly affects the cost of the ship. The **lower the** percentage between the net and the gross the lower the cost.**

* Estimating state this to be 14%. Additionally they state that this is not a precise figure.

* * Source Estimating Department, this ratio **changes with** type of ship.

With the introduction of standardization the gross to net tonnage will change. Almost certainly it will increase. Because of the current method of estimating *it will, on* paper, increase the price of *the* ship. But the actual amount of scrap will not change from the present 4.71% percent certainly not as a result of standardization.

The implications of this situation is a requirement to modify the method of estimating. The present use of 14 percent does not reflect the true figure, if however, it secures contracts it should still be used even if standardization shows a difference in gross to net tonnage. From **a** profit/loss situation the only figure that needs monitoring is the true scrap content.

With the development of work measured values estimating will be able to use more accurate criteria for estimating.

EFFECT ON LONG RANGE PLAN

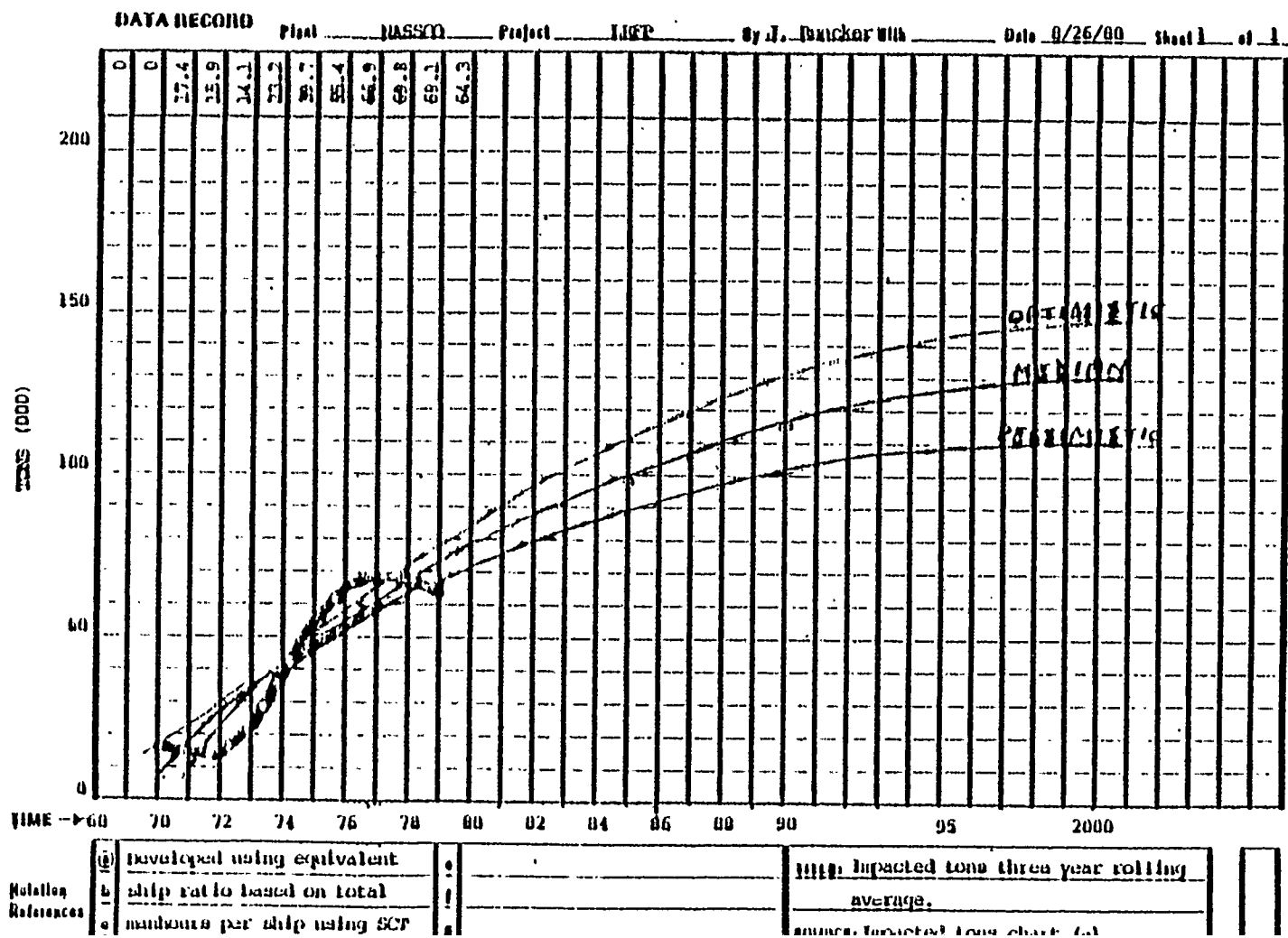
The introduction of standardization of plates in the plate yard will provide the shipyard with sufficient capacity to meet projections indicated by the Long Range Plan.

The expectation shown on the Long Range Plan indicates an increase of 100 percent over the next 20 years.

It is reasonable to assume that the steelyard will be required to provide 100% percent more plates over the same time scale. Over the next twelve years the impacted tons three year rolling average * is shown as:

	<u>000's</u>	<u>Percentage Increase in Output</u>
1979	69.1	
1980	64.3	- 6.95
1981	78.0	12.87
1982	83.0	20.11
1983	88.0	27.35
1984	92.0	33.14
1985	95.0	37.48
1986	99.0	43.27
1987	104.0	50.50
1988	107.0	54.84
1989	110.0	59.18
1990	113.0	63.53
1991	116.0	67.87

* See illustration from Long Range Plan



August 21, 1980

EQUIVALENT IMPACTED TONS

<u>YEAR</u>	<u>NAVY</u>	<u>COMMERCIAL</u>	<u>TOTAL</u>	<u>3 YEAR ROLLING AVERAGE</u>
1968	14,019	--	14,019	--
1969	22,824	--	22,824	--
1970	15,208	--	15,208	17,330
1971	7,464	2,281	9,745	15,925
1972	9	17,354	17,363	14,105
1973	264	42,243	42,507	23,205
1974	21,430	37,740	59,170	39,680
1975	--	64,407	64,407	55,361
1976	--	77,009	77,009	66,862
1977	12,338	55,753	68,111	69,842
1978	55,666	26,450	62,116	69,078
1979	38,951	23,731	62,682	64,303
1980	--	--	--	--

September 1

EQUIVALENT IMPACTED TONS BACKUP DATA

<u>YEAR</u>	<u>TYPE VESSEL</u>	<u>ACTUAL TONS ACROSS PLATE</u>	<u>EQUIVALENT IMPACT RATIO</u>	<u>EQUI</u>
1968	AFS	734	1.86	
	LST	12,285	1.03	
1969	AFS	5,541	1.86	
	LST	12,153	1.03	
1970	LST	14,765	1.03	
1971	LST	7,246	1.03	
	Barge	4,523	.50 (est.)	
	OBO	22	.87	
1972	LST	9	1.03	
	Barge	310	.50	
	OBO	15,152	.87	
	CT	3,534	1.21	
1973	OBO	15,028	.87	
	CT	9,870	1.21	
	SCT	17,226	1.00	
	AOR	105	2.51	
1974	CT	9,664	1.21	
	SCT	26,047	1.00	
	AOR	8,538	2.51	
1975	SCT	50,331	1.00	
	CT	11,220	1.21	
1976	SCT	57,475	1.00	
	CT	5,898	1.21	
	SDT	14,415	.86	
1977	SCT	21,464	1.00	
	SDT	39,871	.86	
	AD	3,491	3.54	
1978	SDT	30,756	.86	
	AD	10,075	3.54	
1979	SDT	27,511	.86	
	CPC	35	1.50 (est.)	
	AD	11,003	3.54	

OPTION SEVEN

Standardization of plate stock.

RECOMMENDATION

Standardization has many advantages:

- (1) Shipyard operations improved
- (2) Labor cost *on crane* seduced
- (3) Purchasing simplified
- (4) Steel control simplified
- (5) Crane life increased
- (6) Low *cost to* implement

The disadvantages of:

- (1) Restricted number of plates.
- (2) Current estimating practice.

do not represent a justification to retain the current system of operation.

The overwhelming weight of evidence supports standardization.

METHOD OF STANDARDIZATION

In order to benefit *from* stanuandardization certain parameters have to be identified.

(1) How many standards?

Based on the available space there should be no more than 240 standards

(2) What elements comprise a plate?

- a) length
- b) width
- c) thickness
- d) grade of material

Length and width can be determined quite simply.

Thickness and grade of material are more difficult and will require discussion and analysis with design and engineering department.*

A program needs to be developed to solve the problems that may be generated by standardization, and as with any set or rules or standards there may be exceptions. 15 this occurs in the form of, for example, a special specification. then it must be justified to whomever is given responsibility for the implementation of standardization.

Clearly here exists the loop hole through which standardization could be degraded. it is imperative that these *exceptions are thoroughly* investigated prior to approval.

Maintenance of the standardization program will require analysis of usage and review the **changes** in standards that are shown to be desirabls.

· *** There are approximately 40 thicknesses and 23 grades of steel in the yard at present.**

THE WHEELABRATOR AND COLLACATOR CAPACITY

The wheelabrator operates at 9'/minutes.

This means that at best one 40' foot 14 such plates in one hour. 1,092 in a two shift 5 day week.

This output is based on plate work **only** and compares very well with the projected crane output of jobs plates per week on one shift.

The collacator cycle time is 4.0 minutes and matches the wheelabrator capacity based on 40' feet long plates.

<u>DATE</u>	<u>LEFTS</u>	<u>STAGED</u>	<u>WHEELABRATOR</u>	<u>DOWNTIME</u>
Thur.				
Aug. 26, 1980	1,615	51	63	
1	704	22	-	
2	688	17	17	
3	-	-	-	
Wed.				
Aug. 06, 1980				
1	409	20		4.50
2	664	31	-	1.10
3	-	-	-	-
Mon.				
Aug. 04, 1980	1,173	51		
1	481	5	82	2.0
2	497	11	11	
3	452	21	-	
Fri.				
Aug. 01, 1980	1,430	37	93	
1	645	16	5	
2	636	16	57	
3	552	16	-	
Thur.				
July 31, 1980	1,833	48	62	
1	769	13	10	
2	585	17	42	3.75
3	392	13	-	
Wed.				
July 30, 1980	1,746	43	52	
1	403	14	1	.60
2	269	11	61	3.0
3	358	14	-	1.0
Tues.				
July 29, 1980	1,027	39	62	
1	598	15	7	1.50
2	496	16	61	1.75
3	293	3	-	-
Mon.				
July 28, 1980	1,387	34	68	
1	602	16	21	
2	361	7	68	
3	903	21	-	

<u>DATE</u>	<u>LIFTS</u>	<u>STAGED</u>	<u>WHEELABRATOR</u>	<u>DOWNTIME</u>
on.				
18, 1980	1,148	25	104	
1	601	18	-	8.0
2	465	4	-	8.0
3	583	13	-	
at.				
16, 1980	572	-	-	
1	572	-	-	-
2	-	-	-	-
3	-	-	-	-
ri.				
15, 1980	572			
1	182	6	11	5.0
2	540	20	82	
3	500	29	-	
hur.				
14, 1980	1,222	55	93	
1	728	13	5	
2	453	9	67	2.5
3	355	11	-	
ed.				
13, 1980	1,536	33	72	
1	577	14	15	
2	739	18	48	3.3
3	603	9	-	
ues.				
12, 1980	1,819	41	63	
1	538	10	3	
2	303	5	73	2.5
3	363	14	-	
on.				
11, 1980	1,204	29	76	
1	585	20	2	
2	600	10	81	
3	499	20	-	
ri.				
08, 1980	1,684	50	83	
1	699	18	9	
2	442	24	57	2.0
3	474	9	-	

REFERENCE E.

PIPE FOOTAGES - PAST & CURRENT

NASSCO CONTRACTS

NATIONAL STEEL AND SHIPBUILDING COMPANY

INTER-DEPARTMENT MEMO

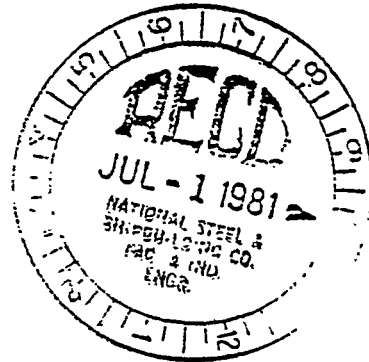
Date June 29, 1981

To: J. Ruecker Dept. _____
Subject: PIPE FOOTAGES-PAST & CURRENT NASSCO CONTRACTS Job No. _____
From: W. Sullivan *Walt Sullivan* Dept. _____

Attached find the per ship pipe quantities for the LST to present NASSCO contracts.

If you have any questions regarding the data give me a call on extension 690.

cc: R. Monastero



MISSISSIPPI BUILT SHIPS-PIPE FOOTINGS (ACTUAL AND ESTIMATED) HISTORICAL AND CURRENT CONTRACTS

10/20/51

1056

[illegible]

PREPARED BY
CHECKED BY

ORIGINATOR		MAY 1972 (K)		JULY 1972 (L)		AUG 1972 (M)	
		Bill of Materials	Drawings	Bill of Materials	Drawings	Bill of Materials	Drawings
		(Net)	(Gross)	(Net)	(Gross)	(Net)	(Gross)
CONTRACT SUPPORT DESIGNS		3 - CONSTRUCTION	100 THINER	3 - CONSTRUCTION	100 THINER	3 - CONSTRUCTION	100 THINER
Start Const. First Ship		9/7/72		3/28/73		10/6/73	
Delivery Last Ship		2/28/75		6/25/75		10/14/76	
Average Service		384 7772	4011 (4/4/76)	370-7772	4011 (6/4/76)	370-7772	4011 (4/4/76)
(1) Ship Structure, Pipe Systems:							
200	Boilers	21511	20811	21511	20811	21511	20811
201	Propulsion Units	-	-	-	-	-	-
203	Shafting, Bearings, Props	462	331	411	385	411	385
204	Cast Iron Air Supply	18	14	22	15	22	15
205	Water Smoke Pipes, Outer Shell	252	200	341	272	341	272
206	Propulsion Control	9197	9260	9822	12073	9822	12073
207	Main Steam System	922	864	1103	1217	1103	1217
208	Low Water & Condensate	5498	5184	7456	7120	7456	7120
209	Coal & Sulfur Systems	1616	1625	2179	2021	2179	2021
210	F.O. & D.O. Services	1037	874	1113	1152	1113	1152
211	Lube Oil System	2273	2477	2215	2465	2215	2465
212	Heating System	1778	1880	2053	2186	2053	2186
213	Ventilation System	-	-	-	-	-	-
214	Air Conditioning Sys.	319	391	318	387	318	387
215	Refueling System & Equip.	567	559	423	377	423	377
216	Comms. Pipings Sys.	4210	3544	4560	4562	4560	4562
217	Plumbing Installation	4623	3705	5026	5338	5026	5338
218	Water, Spent Water & Tank Cleaning	2315	2296	2783	2814	2783	2814
219	Water Distribution & Control	1117	1265	1826	1717	1826	1717
220	Ballast & Ballast Sys.	2217	1777	3427	3460	3427	3460
221	F.O. & S.O. Sampling	3837	3760	4245	3874	4245	3874
222	Scuppers & Deck Drain	702	423	477	477	477	477
223	F.O. & S.O. Transfer Sys.	1141	1111	1009	1024	1009	1024
224	Tank Heating Sys.	47912	52472	57408	62443	57408	62443
225	Compressed Air Sys.	11271	7738	5727	5777	5727	5777
226	Aux. Steam & Exhaust	6458	6319	7866	8548	7866	8548
227	Misc. Pipings Sys.	7170	7047	8665	7718	8665	7718
228	Distillation Plant	-	-	-	-	-	-
229	Boiler House	-	-	-	-	-	-
230	Tank Gas	-	-	-	-	-	-
231	Vent. System, Tubing, Etc.	1653	1640	1853	5720	1853	5720
Total Cost (1) Ship		12082211	11460811	13177611	14800711	13177611	14800711

PREPARED BY	INITIALS	DATE
CHECKED BY		

6/24/74
3 of 10

LINE NO.	CONTRACT	Ship (P)		Ship (R)		Mar. (S)	
		Bill of Mat'l	Drawn	Bill of Mat'l	Drawn	Bill of Mat'l	Drawn
		(Net)	(Gross)	(Net)	(Gross)	(Net)	(Gross)
	Contract SHIPS & DESIGN	4-SHIP (CLM) 100 TONS		4-SHIP (CLM) 100 TONS		3-CORONA 100 MINERS	
	Start Const. First Ship	9/1/74		3/8/74		7/28/74	
	Delivery Last Ship	11/1/76		3/15/78		2/1/77	
	1-CORONA 100 MINERS	3715, 67700	444,000	398-772,000	371,750	102-772,000	101,676
	One (1) Ship, Fueling Pipe Systems						
100	Boilers	NOT AVAILABLE	664 FT.	507 FT.	6127 FT.	447 FT.	428 FT.
201	Propulsion Units						
202	Shafting, Bearings, Pumps		478	391	372	544	591
203	Combustion Air Supply		22	20	21	6	6
204	Up-take Smoke Pipes, Outlets, Stacks		213	315	764	241	269
205	Propulsion Control		7823	9446	17578	7266	9453
207	Main Steam System		824	770	1290	773	781
208	Hot Water & Circulation		6761	7316	10227	5254	5874
209	Gas & Control Systems		2277	2535	5871	1454	1400
210	F.O. & L.O. Systems		1162	1164	1644	1087	492
211	Low Oil System		2143	2260	2420	2173	2220
300	Heating System		1710	2188	2004	1102	1584
301	Ventilation System						
302	Air Conditioning Sys.		2787	277	304	321	389
303	Refra. Spares & Equip.		388	431	315	572	663
304	Cargo Piping System		4647	4220	4261	6027	6040
305	Thurbing, Installation		5702	4828	4521	4273	4224
306	Gas Exhaustion Unit Control		2587	6380	6217	2215	2100
307	Low Exhaustion & Control		1505	5715	4730	1444	1187
308	Bilge & Ballast Sys.		3521	3757	3700	1777	2053
309	F.W. & S.W. Supply		4014	3747	4457	3711	3647
310	Scuppers & Deck Drains		547	631	376	588	527
311	F.O. Fill & Transfer Sys.		1557	1477	1541	1122	1262
312	Thrust Monitoring Sys.		67118	58477	57074	44974	46529
313	Compressor Air Sys.		5346	6146	6261	7727	8124
314	Air Stern & Exhaust		7576	8398	7629	6929	6800
316	Air Piping Sys.		12364	15302	14640	8057	7311
317	Deballing Plant						
323	Room Heaters						
324	Travel Cans						
325	Waste, Incinerator, etc.		4521	6684	6510	2162	1882
326	1st of One (1) Ship		14873811	15424211	17114211	11512211	11647611

6/24/51
 41066

CONTRACT	CHESLEY (V)		SHEL (W)		ALCO (X)
	Bill of Materials (Net)	Drawings (Gross)	Bill of Materials (Net)	Drawings (Gross)	Bill of Materials (Net)
CONTRACT SHIPS & DESIGNS	2-341101	2-341101	2-341101	2-341101	2-341101
Start Const. First Ship	7/7/75	7/7/75	7/7/75	7/7/75	7/7/75
Delivery Last Ship	3/1/77	3/1/77	10/25/78	10/25/78	11/10/80
FOOTING SERVICE	380-7772	380-7772	405-7772	405-7772	408-7772
(1) Ship Footing Pipe Splices:					
201 Berthing	701	742	819	1037	900
202 Propulsion Units					
203 Distilling, Boilers, Props	559	477	1240	3522	1130
204 Combustion Air Supply	20	5	12	0	12
205 Helixes, Suez Pipe, Other St	233	418	60	1154	171
206 Propulsion Control	9418	9576	4748	5222	4725
207 Main Steam System	990	1274	1280	2507	715
208 Low Water & Condensate	7150	8751	9703	10843	10013
209 Air & Cool Water S/W Sys.	2167	1673	5220	19381	4025
210 L.R. & D.O. Systems	1019	1047	2253	1184	2516
211 Lub Oil Systems	2138	3611	2387	2655	2647
212 Heating System	1968	1746	771	1133	791
201 Ventilation System					
202 Air Conditioning Sys	295	337	217	227	244
203 Heating Pipes & Equip.	342	380	342	440	355
204 Cannon Piping Sys.	4624	4647	7529	7529	6276
205 Humidity Installations	4642	4377	4000	4236	4514
206 Fire Sprinkling & Tank Cleaners	2681	2560	8165	6280	7931
207 Fire Extinguishing & Control	1702	1600	8367	7972	2808
208 Balise & Buoyal Sys.	3572	3456	6527	6705	5048
209 Light & Sound Summary	3489	3435	3733	4287	4352
210 Supplies & Deck Paints	690	477	492	754	599
211 F.C.T. & Tonnage Sys.	1452	1353	1581	1554	1611
212 Tank Cleaning Sys	58751	60460	19040	13807	13074
213 Compressed Air Sys.	5408	5282	10708	10577	9579
214 Aux. Steam & Exhaust	7682	7575	10030	13343	11041
216 Misc. Piping System	8419	9115	35727	33413	28244
217 Distilling Plant					
223 Bow Thruster					
225 Turret Gun					
227 Water Sealing Pipes, etc.	4707	5112	2246	3278	3277
Total One (1) Ship	135067	140036	143751	141432	128782

CONTRACT		AD: 1000 (10, 100)	
		Bill of Materials	Drawings
		(NET)	(GROSS)
1	Contract 1. Ships Construction	42, 100, 100, 100, 100, 100	100, 100, 100, 100, 100, 100
2	First Contract, First Ship	100, 100	
3	Delivery Last Ship	100, 100, 100, 100, 100, 100	
4	Contract Source	100, 100, 100, 100, 100, 100	
5	Ship Fueling, 200, 5, 10, 10, 10, 10		
6	Boilers	100, 100	100, 100
7	Propulsion Units		
8	Shuttlers, Bearings, Props	100, 100	100, 100
9	Combustion Air Supply	100, 100	100, 100
10	Exhaust, Smoke Pipes, Air Struts	100, 100	100, 100
11	Exhaust Control	100, 100	100, 100
12	Main Steam System	100, 100	100, 100
13	Feed Water & Condensate	100, 100	100, 100
14	Hot & Cold Flow (S) Sys.	100, 100	100, 100
15	F.O. & U.O. Service	100, 100	100, 100
16	Lube Oil System	100, 100	100, 100
17	Heating System	100, 100	100, 100
18	Ventilation System	100, 100	100, 100
19	Air Conditioning Sys.	100, 100	100, 100
20	Refueling System & Equip.	100, 100	100, 100
21	Engine Piping Sys.	100, 100	100, 100
22	Heating Installations	100, 100	100, 100
23	Int. Superheating & Tank Cleaning	100, 100	100, 100
24	Fire Extinguishing & Control	100, 100	100, 100
25	Ballast & Ballast Sys.	100, 100	100, 100
26	Hot & Cold Summary	100, 100	100, 100
27	Engine Piping & Deck Items	100, 100	100, 100
28	Hot & Cold Transfer Sys.	100, 100	100, 100
29	Heating Sys.	100, 100	100, 100
30	Compressed Air Sys.	100, 100	100, 100
31	Hot Steam & Exhaust	100, 100	100, 100
32	Hot Piping Sys.	100, 100	100, 100
33	Distilling Plant	100, 100	100, 100
34	Exhaust Thruster		
35	Exhaust Gens		
36	Exhaust Summary Tables, etc.	100, 100	100, 100
37	Exhaust Allocation		
38	Exhaust Summary	100, 100	100, 100
39	Exhaust Summary	100, 100	100, 100

UNION OIL (F)	
Bill of Lard	Drawn
(NET)	(GROSS)
31.11.22	31.11.22
11.1.23	11.1.23
11.2.23	11.2.23
11.3.23	11.3.23
11.4.23	11.4.23
11.5.23	11.5.23
11.6.23	11.6.23
11.7.23	11.7.23
11.8.23	11.8.23
11.9.23	11.9.23
11.10.23	11.10.23
11.11.23	11.11.23
11.12.23	11.12.23
12.1.24	12.1.24
12.2.24	12.2.24
12.3.24	12.3.24
12.4.24	12.4.24
12.5.24	12.5.24
12.6.24	12.6.24
12.7.24	12.7.24
12.8.24	12.8.24
12.9.24	12.9.24
12.10.24	12.10.24
12.11.24	12.11.24
12.12.24	12.12.24
13.1.25	13.1.25
13.2.25	13.2.25
13.3.25	13.3.25
13.4.25	13.4.25
13.5.25	13.5.25
13.6.25	13.6.25
13.7.25	13.7.25
13.8.25	13.8.25
13.9.25	13.9.25
13.10.25	13.10.25
13.11.25	13.11.25
13.12.25	13.12.25
14.1.26	14.1.26
14.2.26	14.2.26
14.3.26	14.3.26
14.4.26	14.4.26
14.5.26	14.5.26
14.6.26	14.6.26
14.7.26	14.7.26
14.8.26	14.8.26
14.9.26	14.9.26
14.10.26	14.10.26
14.11.26	14.11.26
14.12.26	14.12.26
15.1.27	15.1.27
15.2.27	15.2.27
15.3.27	15.3.27
15.4.27	15.4.27
15.5.27	15.5.27
15.6.27	15.6.27
15.7.27	15.7.27
15.8.27	15.8.27
15.9.27	15.9.27
15.10.27	15.10.27
15.11.27	15.11.27
15.12.27	15.12.27
16.1.28	16.1.28
16.2.28	16.2.28
16.3.28	16.3.28
16.4.28	16.4.28
16.5.28	16.5.28
16.6.28	16.6.28
16.7.28	16.7.28
16.8.28	16.8.28
16.9.28	16.9.28
16.10.28	16.10.28
16.11.28	16.11.28
16.12.28	16.12.28
17.1.29	17.1.29
17.2.29	17.2.29
17.3.29	17.3.29
17.4.29	17.4.29
17.5.29	17.5.29
17.6.29	17.6.29
17.7.29	17.7.29
17.8.29	17.8.29
17.9.29	17.9.29
17.10.29	17.10.29
17.11.29	17.11.29
17.12.29	17.12.29
18.1.30	18.1.30
18.2.30	18.2.30
18.3.30	18.3.30
18.4.30	18.4.30
18.5.30	18.5.30
18.6.30	18.6.30
18.7.30	18.7.30
18.8.30	18.8.30
18.9.30	18.9.30
18.10.30	18.10.30
18.11.30	18.11.30
18.12.30	18.12.30
19.1.31	19.1.31
19.2.31	19.2.31
19.3.31	19.3.31
19.4.31	19.4.31
19.5.31	19.5.31
19.6.31	19.6.31
19.7.31	19.7.31
19.8.31	19.8.31
19.9.31	19.9.31
19.10.31	19.10.31
19.11.31	19.11.31
19.12.31	19.12.31
20.1.32	20.1.32
20.2.32	20.2.32
20.3.32	20.3.32
20.4.32	20.4.32
20.5.32	20.5.32
20.6.32	20.6.32
20.7.32	20.7.32
20.8.32	20.8.32
20.9.32	20.9.32
20.10.32	20.10.32
20.11.32	20.11.3

[illegible]

6/21/81
COPG

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
CONTRACT		AMERICAN THUNDER (1)		AMERICAN THUNDER (3)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															